IICA

INSTITUTO INTERAMERICANO DE COOPERACION PARA LA AGRICULTURA — OEA —

Assessing the Impact of Agricultural Policies on Producers and Consumers in Selected OECS Countries

by

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and

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What is IICA?

The Inter-American Institute for Cooperation on Agriculture (IICA) is the specialised agency for agriculture of the Inter-American system. the Institute was founded on October 7, 1942 when the Council of Directors of the Pam American Union approved the creation of the Inter-Americam Institute of Agricultural Sciences.

IICA was founded as an institution for agricultural research and graduate training in tropical agriculture In response to changing needs in the hemisphere, the Institute gradually evolved into an agency for technical cooperation and institutiuonal strengthening in the field of agriculture. These changes were officially recognised through the ratification of a new Convention on December 8, 1980. The Institute's purposes under the new Convention are to encourage, facilitate and support cooperation among the 31 Member States, so as to better promote agricultural development and rural well-being.

With its broader and more flexible mandate and a new structure to facilitate direct participation by the Member States in activities of the Inter-American Board of Agriculture and the Executive Committee, the Institute now has a geographic reach that allows it to respond to needs for technical cooperation in all of its Member States.

The contribution provided by the Member States and the ties IICA maintains with its twelve Permanent Observer Countries and numerous international organizations provide the Institute with channels to direct its human and financial resources in support of agricultural development throughout the Americas.

The 1987-1991 Medium Term Plan, the policy document that sets IICA's priorities, stresses the reactivation of the agricultural sector as the key to economic growth. In support of this policy, the Institute is placing special emphasis on the support and promotion of actions to modernize agricultural technology and stregthen the processes of regional and subregional integration.

In order to attain these goals, the Institute is concentrating its actions on the following five programmes: Agricultural Policy Analysis and Planning; Technology Generation and Transfer; Organisation and Management for Rural Development; Marketing and Agroindustry; and Animal Health and Plant Protection.

These fields of action reflect the needs and priorities established by the Member States and delimit the areas in which IICA concentrates its efforts and technical capacity. They are the focus of IICA's human and financial resource allocations and shape its relationship with other international organisations.

The Member States of IICA are: Antigua and Barbuda, Argentina, Barbados, Bolivia, Brazil, Canada, Chile, Colombia, Costa Rica, Dominica, the Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras, Jamaica, Mexico, Nicaragua, Panama, Paraguay, Peru, St. Lucia, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago, the United States of America, Uruguay and Venezuela.

The Permanent Observer Countries of IICA are: Arab Republic of Egypt, Austria, Belgium, Federal Republic of Germany, France, Israel, Italy, Japan, Netherlands, Portugal, Republic of Korea and Spain.

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List of Acronyms

ABDB	Antigua and Barbuda Development Bank
CARDI	Caribbean Agricultural Research and Development Institute.
CARICOM	Caribbean Community and Common Market
CATCO	Caribbean Agricultural Trading Company
EC DOLLAR	Eastern Caribbean dollar, the unit of currency used by the OECS member states.
EEC	European Economic Community
GATT	General Agreement on Tariffs and Trade
GDP	Gross Domestic Product
OECS	Organization of Eastern Caribbean States
UK	The United Kingdom i.e. Great Britain and Northern Ireland
ANTH	Anthurium
AVO	Avocado
BFRT	Breadfruit
CABB	Cabbage
CARR	Carrot
CASH	Cashew
COTT	Cotton
CUCUM	Cucumber
DASH	Dasheen
EDDO	Eddoe
GAPP	Golden Apple
GING	Ginger
GLILY	Ginger Lily
HPEP	Hot Pepper
MGO	Mango
PFRT	Passion Fruit
PINE	Pineapple
PPAW	Pawpaw
PUMP	Pumpkin
SPEP	Sweet Pepper
SPOT	Sweet Potato
SSOP	Soursop
TANN	Tannia
TOM	Tomato
WMELON	Watermelon
WPOT	White Potato

Foreword

Since the 1970s, among countries of the Commonwealth Caribbean, policies of import substitution and self-reliance have been widely adopted. These policies have contributed in part to lagging exports, slow economic growth and to concern about the relevance of the growth paradigms to which many of the Caribbean countries subscribed. In addition the trend toward global trade liberalization, has contributed to some erosion of the preferential export status once held by many Caribbean countries under the aegis of agreements such as EEC/LOME and CBI. This has resulted in further declines in exports throught dampened expectations.

Among member states of the OECS the process of agricultural transformation has not kept pace with global trends, as the agricultural sector has been somewhat insulated from many of the market forces which have given rise to these trends. This is compounded by the knowledge gap which continues to exist in relation to economic interactions at the sectoral level, particularly in regard to the likely sector response to increasing pressures to become more open and competitive.

In order to assist in generating some of the information critical to decision making in the agricultural sector, as well as to address some of the policy issues which impact CARICOM agriculture, the Inter-American Institute for Cooperation on Agriculture (IICA) in 1992 initiated a project entitled "Engendering Agricultural Competitiveness in CARICOM". This project in addition to providing technical assistance and training in techniques and methodologies for policy analysis, was also conceived to conduct policy relevant studies with an emphasis on creating the policy environment necessary for the emergence of commodities with potential to be export competitive.

The present study which has been conducted in collaberation with the University of the West Indies, emerged out of the recognition that very little information exists on the impact of agricultural policies on production and trade. As the OECS countries enter an era of increasing trade liberalization, precipitated by the conclusion of the multilateral round of GATT, it is anticipated that the study will prove to be particularly useful in assisting these countries to monitor and reform agricultural policies, in line with the dictates of various international agreements.

While the list of commodities and countries for which the analysis has been conducted is by no means exhaustive, IICA recognizes the importance of initiating research in this critical area. IICA anticipates continuing to conduct collaborative research in the area of agricultural and trade policy with its regional and international partner institutions. It is expected that such research will contribute to the decision-making process as member states continue to wrestle with the task of modernizing the productive base of their economies in their attempts to achieve the difficult goal of 'increased competitiveness' both in domestic and foreign markets.

Reginald E.Pierre
Director of Operations, Caribbean Area

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Patrick Antoine
Errol Simms

TABLE OF CONTENTS

TABLE OF CONTENTS
(Cont'd)

List of Figures

List of Figures (cont'd)

List of Figures (cont'd)

List of Tables

SECTION I. INTRODUCTION

In most of the OECS countries, agriculture continues to be the major contributor to national income, and even in the two countries (Antigua/Barbuda, St. Kitts/Nevis) where it is not now the dominant sector, it still continues to make a significant contribution. Traditionally, the agricultural sector in each of the islands has been dominated by the production of just a few crops, namely: sugarcane in St. Kitts and Antigua; bananas and coconut in St. Lucia, Dominica, and St. Vincent; and banana, cocoa and nutmeg in Grenada. These crops (banana, cocoa and nutmeg) are grown principally for export and they have all enjoyed access to the European market under preferential trading arrangements.

Preferential trading arrangements are however being systematically phased out, as countries move to liberalize agricultural trade and to rationalise the use of agricultural policies and programmes. In addition, agriculture among countries of the Caribbean has been subject to considerable government intervention aimed at boosting prices received by farmers and reducing the cost of production. At the insistence of international financing institutions such as the World Bank however, on the condition of loan approval, much of the protection afforded agriculture will either have to be eliminated or phased out over mutually agreeable time frames.

As a result of these and other changes in the global economic environment, governments in the OECS countries will have little option but to adopt measures aimed at diversifying their agricultural sectors. Such measures must be consistent with an export-led development strategy. The need to accept this new orientation to development is imperative, as many of the OECS countries can ill-afford to incur further debt or budgetary deficits to support the agricultural sector.

1.1 Objectives:

It is against this background that the study was undertaken with the objectives of:

i. identifying the major policy measures adopted by the respective governments toward their agricultural sector over the 1989-93 period;

ii. assessing the effect of these policies in terms of their aggregate impact on the income of producers and the welfare of consumers of the crops studied, as well as the extent of transfer payments resulting from such policies; and

iii. determining the extent of protection and the disincentive to production resulting from the policies introduced.

1.2 Scope of the Analysis:

This study focuses on the OECS member countries of: Dominica, Grenada, St. Vincent and the Grenadines, St. Lucia, St. Kitts-Nevis, and Antigua and Barbuda.

The commodities covered in this report are: avocado, anthurium,ginger, hot pepper, mango, pawpaw, passion fruit, pineapple, soursop, watermelon and sweet potato. A listing of the crops by country is presented in Appendix 1.

1.3 The Approach to the Study:

Firstly, the respective governments' agricultural policies which impact on the crops under investigation and on agriculture in general are identified and discussed. In this section the focus will be on credit and trade policies.

Secondly, in order to assess the impact of the policies, the concepts of Producer and Consumer Subsidy Equivalents (PSEs and CSEs) will be used. The PSE attempts to measure the total value of government support to producers while the CSE measures the effect of agricultural policies on consumers, (the CSE may be construed as the level of subsidy that would be required to compensate consumers for the loss of welfare contingent on the removal of government support programmes to the agricultural sector).

The divergence between costs and revenues at efficiency and non-efficiency prices can provide useful insights into the effect of government intervention on the commodity in question. The Policy Analysis Matrix (PAM) methodology, popularized by Monke and Pearson (1991) was used to accomplish this divergence. The PAM is a social accounting framework which focuses on the actual revenues and costs of a particular commodity programme. These costs and revenues are computed on the basis of both private (market) and efficiency (social) prices. Using the PAM framework the Consumer Subsidy Equivalent (CSE) and the Producer Subsidy Equivalent (PSE) were computed.

While the Producer and Consumer Subsidy Equivalents measure the level of transfer caused by the policies pursued in regard to producers and consumers respectively, the NPC and

EPC focus on the impact of incentives/disincentives on the productive efficiency of the farm-firm. More specifically, the NPC and EPC measure the impact of policies on the income received by producers and the prices they pay for traded inputs. In this way, a measure of the "incentive effect" of the policies pursued is provided.

A more comprehensive discussion of these measures, including their definitions, interpretations and data requirements is provided in Sections III and IV.

SECTION II - THE POLICIES PURSUED

2.1 Introduction

In this section, an overview of general agricultural policies will be presented. This will be followed by a detailed enumeration and discussion of the policies pursued by the individual OECS member states over the period 1989-91.

The data used originated from various sources. Much information was obtained from the planning section of the various Ministries of Agriculture. A review of previous relevant studies undertaken in these countries was also carried out. Additional information was obtained through perusal of the Government Budget Speeches presented over the period under review in the respective countries.

2.2 General Policy Overview:

All five OECS governments have intervened in the agricultural sector through the introduction of various policy measures. Broadly, the policies pursued were intended to:

a. instill confidence in the sector and to improve its economic viability;
b. achieve diversification of agricultural production and thus reduce the economic dependence on one or two primary commodities that have come to typify the sector;
c. improve agricultural production and productivity and enhance the quality of life in rural areas;
d. stimulate employment and increase intersectoral linkages, especially in regard to agro-processing and tourism; and
e. contribute positively to the balance of payments either through increased export, or import substitution.

To achieve these objectives both direct and indirect policy measures were adopted. The direct measures included direct government fiscal support; the provision of credit, and special development projects. The indirect measures relate to the monetary and exchange rate as well as the trade policies pursued by the respective governments.

2.2.1 Direct Government Support:

Direct government support measures represented the main forms of direct assistance to agriculture and were generally provided through the National Budget or through incentive legislation. The main measures included:

- the construction of physical infrastructure for farmers such as access roads and irrigation facilities;
- the provision of improved planting material;
- the strengthening of agricultural research and extension activities;
- direct subsidy payments and rebates on certain commodities and agricultural inputs;
- reduced levels of taxation on selected machinery, equipment and implements;
- tariffs on food imports and levies on exports of certain crops;
- regulation of imports through a system of import licenses and other forms of quantitative restrictions;
- exemptions from taxation or reduction of tax rates on agricultural income; and
- guaranteed prices and markets through purchases by Public Sector Marketing Boards.

The list covers the range of direct government support measures including fiscal support policies adopted by all five OECS member countries included in the study. However, the specifics of the measures vary both from country-to-country, and from commodity-to-commodity.

2.2.2 Development Funds or Special Projects:

In some instances where the budgetary provision was deemed inadequate or where it was thought necessary to accelerate the diversification process, special projects were launched or development funds obtained.

2.2.3 Credit:

The credit policies pursued were aimed primarily at providing financing at concessionary rates of interest. Another objective was to improve farmers' access to credit by way of less stringent collateral requirements. A wide range of credit assistance was provided in areas including the provision of on-farm infrastructure and general production activities. Farmers were also provided with loan appraisal assistance as well as general advice on the efficient management of their loan portfolio.

2.2.4 Macroeconomic Policies:

The macroeconomic policies pursued by the OECS countries have had a pervasive, though indirect, effect on agriculture. Exchange rate policy, interest rate, wage rate, and trade policies are of particular interest in this regard.

In all of these countries, a fixed rate regime prevails whereby the EC dollar, remains pegged to the US dollar at a rate which has been in effect since the 1970s. The net result of this inflexibility in the exchange rate regime has been the possible neutralization of fiscal support measures introduced to enhance agricultural production and profitability.

The prevailing level of interest and wage rates in the wider economy in respective OECS countries also impacted the agricultural sector adversely. High interest rates served to reduce the supply of funds to agriculture in countries like St. Lucia, Antigua/Barbuda, and St. Kitts/Nevis where tourism experienced considerable growth and where there was an associated increase in the demand for capital to finance hotel construction and other tourism related infrastructure. These developments in the non-farm sectors also attracted labour away from agriculture to such an extent that in some of these countries periodic agricultural labour shortages resulted in increased wage rates thereby increasing the cost of farm production.

In the area of trade, all of the OECS countries maintained both tariff and non-tariff restrictions on the importation of agricultural products from non-CARICOM countries. The objective of these policies was to protect local agriculture and hence the welfare of farmers. The traditional export crops such as banana, cocoa and sugar have long enjoyed preferential trading arrangements with the EEC and other North Atlantic countries. These resulted in price premiums which exceeded those which would otherwise have been possible on the world market.

The continuation of the preferential trading regime and the use of both tariff and non-tariff measures will have to be phased out, in conformity with the recommendations emerging out of the Uruguay Round of the GATT. Diversification of agricultural production in a manner which exploits the competitive advantage of individual countries appears to be of vital importance for the long-run survival of agriculture in particular, and the economy of OECS member states in general.

2.3 Policy Measures in Antigua:

Antigua is the only OECS country where agriculture is not a major contributor to Gross Domestic Product. Agriculture in this country is fragmented and operates under a number of constraints. These include:

- scarcity of water;
- expensive farm inputs;
- shortage of labour and relatively high wage rate;
- shortage of planting material;
- weak research capability at the Ministry of Agriculture;
- weak extension services and a large number of untrained farmers;
- minimal lending on the part of commercial banks to the agricultural sector; and
- relatively high rates of interest on loans.

In recent years however, policies have been instituted to expand agricultural production particularly with respect to vegetables and fruits which were considered to be two areas that could provide opportunities for inter-sectoral linkages with the thriving tourism sector. In this regard, the following policies were instituted:-

2.3.1 Policies Regarding Vegetable Production:

- 100% duty free concessions on all primary agricultural inputs;
- subsidized water to farmers located close to government dams;
- provision of tractor service at subsidized rates;
- provision of subsidized credit through the Antigua Barbuda Development Bank (ABDB). (The loan rate was between 10.5 and 12% whereas comparable loans from commercial banks attracted interest at the rate of 14-16%);
- provision of technological advice through the agricultural extension service; and
- provision of assistance through the Central Marketing Corporation in collaboration with the Caribbean Agricultural Trading Company (CATCO), in the marketing of vegetables, both on the local market as well as the export market.

2.3.2 Policies Regarding Fruit Crops:

The priority crops were citrus, mangoes, avocado, pawpaw, and pineapples. The policies pursued included:

- the provision of planting material at highly subsidized rates. It was estimated that the cost of producing a budded or grafted plant in 1987 was over EC$13 while

it was sold for EC$7.00;

- the validation of appropriate production technology for the various crops;
- the provision of technical assistance and training to farmers through the government's extension service;
- the provision of subsidized credit through the ABDB; and,
- the provision of subsidized irrigation water.

2.4 Policy Measures in Dominica

Economic activity in Dominica is dominated by the agricultural sector. In 1986, agriculture contributed 30% to Gross Domestic Product (GDP) and accounted for approximately 75% of all export earnings. Banana is the principal crop and it accounted for almost 98% of agricultural exports in 1988. Another important crop is coconut, which is used for domestic consumption as well as intermediary input in agro-industrial production. A fair amount of citrus is also grown, and at one time this crop was an important earner of foreign exchange.

Since the late 1980s, the goals of Dominican agricultural policy were stated as follows:-

- to improve the quality of life of the rural population;
- to achieve expansion in export earnings;
- to raise the standard of living of the population through greater income generation and employment creation;
- to foster economic stability through the diversification of agriculture; and
- to sustain the productive potential of the agricultural resource base.

The last goal of resource sustainability is particularly relevant to Dominica as the country's topography makes it particularly susceptible to the hazards of soil erosion.

The policies pursued in furtherance of the above goals included:-

- the encouragement of production through the provision of various incentives such as direct production subsidies for land clearing and equipment use;
- the provision of infrastructural support such as feeder roads and fish landing sites;
- the provision of technical, advisory and material support to farmers through the Ministry of Agriculture;
- the stimulation of agro-processing through the operation of the Dominican Agro-Industries (DAI) and through the provision of various incentives to agro-processors;
- the provision of subsidized credit through the operation of the AID Bank;

- technology validation and generation through collaboration with the Caribbean Agricultural Research and Development Institute (CARDI);
- the provision of technical assistance and material support for soil conservation;
- the removal of taxes on export sales including stamp duty; and
- tax exemption for imported agricultural inputs such as equipment and tools,fertilizer, insecticides, fungicides, and packaging material.

It is evident from the foregoing that both the goals and the supporting strategies for Dominica were stated in very general terms. This makes objective assessment of these strategies quite difficult. In addition, agricultural policy/planning personnel in Dominica have identified the following weaknesses:-

- broad policy goals which made it difficult to translate policies into operational, measurable, time-bound objectives, with the result that the strategies pursued were rather weak and diffused;
- critical policy measures were administered by separate agencies with little coordination or integration among them, and this served to reduce the effectiveness of the strategies implemented;
- there was little or no indication of the relative impact of the various policy measures; and
- agricultural policy measures were not generally well understood by producers, a situation which accounts in part for the reduced effectiveness of these measures.

2.5 Policy Measures in Grenada

Agriculture continues to play a dominant role in the Grenadian economy. In 1991 for instance, agricultural exports represented over 80% of total domestic exports, with cocoa, nutmeg and banana being the principal commodities. The performance of the sector, however, declined in recent years and this decline contributed to an increase in the trade deficit over the period 1987-1992.

Governmental policy measures adopted to stimulate the sector's performance included:

- the provision of subsidized credit through the Grenada Development Bank (G.D.B.). Interest rates on GDB loans ranged from 9.5 to 10.5% whereas commercial bank loans averaged 13%. While it is the view of some of the technocrats in the Agricultural Planning Unit of the Ministry of Agriculture in Grenada, that the GDB was the main source of credit for small and medium-sized

farmers engaged in the production of non-traditional crops. In fact, the GDB provided only about 20% of the credit to the sector between 1985 and 1990. The GDB approves loans for crop establishment and for infra-structural development. Among the activities financed include banana, sugar, and mixed crop production; livestock production; orchard establishment; commercial vegetable production; cut flower production; and farm equipment purchases, including vehicle purchases;

- the institution of trade and regulation policies which are intended to have both a direct and indirect incentive effect on the agricultural sector. In this area the government:
  - i. provided training in marketing especially to non-traditional exporters;
  - ii. undertook export representation and promotion on behalf of farming groups;
  - iii. assisted with the provision of marketing facilities such as cold storage facilities at the sea-port and air-port;
  - iv. operated an import license regime to protect local agriculture against competition from imports; and
  - v. established grades and standards for export produce through the Bureau of Standards.
- the provision of agricultural infrastructure, especially roads, and the joint development with relevant farmer organizations, of facilities for produce handling and packaging;
- the elimination of taxes on agricultural exports;
- the provision of duty and tax concessions for traded agricultural inputs;
- the provision of subsidized land preparation services and subsidized planting material;
- the provision of technical assistance to farmers through the operation of the extension services.

2.6 Policy Measures in St. Lucia

Despite the rapid development of tourism in recent years, agriculture continued to be the major contributor to national income in St. Lucia. The sector's direct contribution to Gross Domestic Product (GDP) increased from 12% in 1980 to 17% in 1986, and since 1984 it grew at an average rate of 2% per annum. In terms of employment, over 34% of the labour force was employed in agriculture.

The agricultural sector is, however, dominated by the banana industry which is the country's main foreign exchange earner. Coconut is another important crop, but it is produced mainly for domestic consumption and as an input to the nascent agro-processing industry. Tree crops such as coffee, mangoes, avocado, citrus and breadfruit are also widely grown, but production of these crops is scattered and remains largely disorganized.

During the late 1980s, official agricultural policy in St. Lucia was aimed at achieving the following broad goals:

a. improved nutrition for the population with particular emphasis placed on low income groups;
b. increased production of local substitutes for selected agricultural products that are currently imported;
c. increased export of high quality agricultural products;
d. improvement in the quality of life of rural families through increased farm income; and
e. diversification of agricultural production to reduce the reliance on banana and coconut which are quite vulnerable to natural disasters such as hurricanes as well as to the vagaries of the market. This is especially so in the case of banana.

Some of the major constraints to agricultural development in St. Lucia include:

- an antiquated land tenure system which led to severe fragmentation of land holdings;
- poorly organized markets for domestic agriculture;
- poor rural infrastructure; and
- inadequate credit facilities.

In order to overcome these constraints and to achieve the goals listed above, the Government implemented a number of strategies and programmes. The principal measures adopted were as follows:

a. Marketing: the establishment of improved marketing infrastructural facilities and marketing support services such as the establishment and enforcement of grades and standards.
b. Import Substitution: this entailed the imposition of controls on the importation of selected agricultural products for which local substitutes could be found.

c. Export Promotion: this involved the undertaking of research aimed at identifying markets in non-traditional destinations for non-traditional crops such as cocoa, mangoes, breadfruit, plantains and root crops.

d. Credit and Input Supply Services: the measures here were aimed at identifying (supplying) soft loan financing to the sector. Commercial banks were also encouraged to expand their agricultural loan portfolio at concessionary rates of interest. Input supply depots were established to allow for greater availability and easier accessibility to imported inputs such as fertilizers and pesticides.

e. Land Tenure and Soil Conservation: because of the previously high degree of insecurity of land tenure, most farmers were unable to acquire credit for long-term investment in tree-crops, irrigation or soil conservation measures. Thus, incentives or subsidies were provided to encourage farmers and in particular small land owners, to engage in environmentally sound and sustainable land management practices.

f. Technology Generation, Validation and Transfer: the strategies here revolved around research carried out under the aegis of the Ministry of Agriculture and CARDI aimed at developing and/or introducing improved agronomic practices, production and processing techniques, and the dissemination of appropriate technology among farmers and the Extension Service;

g. Subsidies: these were provided for the acquisition of purchased inputs such as fertilizer for land clearing, weeding and drainage works and for tractor hire under schemes such as the Orchard Crop Development Programme. Subsidized planting materials, especially for tree crop development, were also made available to farmers.

2.7 Policy Measures in St. Kitts/Nevis

The agricultural sector in St. Kitts is dominated by the sugar industry which continues to occupy most of the arable lands. Nevis, on the other hand, produces no sugar. In terms of non-sugar agricultural production, the main crops grown are tubers (yams, sweet potato, dasheen, eddoes, white potatoes) and vegetables (tomatoes, pepper, cabbage, cucumber). Fruit crop farming is not practised to any great extent, and livestock production is also very limited in scope. In the past, sea island cotton and peanuts were exported, but production is now

negligible.[1] Farmers in Nevis and the non-sugar producing farmers in St. Kitts are largely part-time and subsistence-oriented. This is due to several factors which include:

- Lack of land tenure: Almost all of the agricultural land is owned by the State, and in St. Kitts, there is no institutional administrative system in place to regulate the lease or sale of agricultural land. In Nevis on the other hand, a system for granting long-term leases is in operation. This lack of tenure to land serves as a deterrent to agricultural development.

- Absence of tradition in peasant farming: Because of the historical dominance of the sugar industry, an independent small farming sub-sector never emerged in St. Kitts, and farming continues to be viewed as an occupation of low prestige. Thus, most ambitious rural men are generally not interested in farming: they either seek employment outside of agriculture or emigrate.

- Advanced age of farmers: Small farmers in St. Kitts/Nevis are relatively advanced in age. According to the 1987 Census, about 50% of the so called "larger farmers" were over 55 years old. Most of these farmers are generally past employees of the sugar industry who had been granted use of land after a number of years of satisfactory service. Generally, small farming is seen as a post retirement activity. In most cases, these older farmers are reluctant to undertake any significant level of investment and are particularly risk averse.

- Prevalence of part-time and subsistence farming: In 1987, about 80% of the farms were under 3 acres. This small size combined with the low yielding technology, meant that the output from these "mini farms" could not provide an adequate income to their owners, and consequently, these individuals had to seek employment outside agriculture. In fact, according to the 1987 Agricultural Census, only about 6% of all farmers derived more than half their income from farming.

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[1] The presentation in this section draws heavily on the following documents: Booker Agricultural International Limited St.Kitts Agriculture Sector Review, Phase 1: The Sugar Industry, (Sept 1984); Government of St.Kitts and Nevis, Ministry of Agriculture, Lands, Housing and Development; St.Kitts and Nevis Agricultural Diversification Study, (3 Vols) Jan 1988; Study sponsored by UNDP, FAO and CDB; St.Kitts and Nevis Agricultural Rehabilitation and Diversification Sector Loan FAO/CP Mission Report.

- Limitation of the internal market and exporting difficulties: The domestic demand for the output of non-sugar agriculture was limited, due to the small size of the market (48,000 inhabitants). The expansion of tourism has lead however, to a broadening of the market for quality fruits and vegetables. Attempts at exporting fresh produce have not been very successful though, due to the absence of reliable shipping links and the inability to attain the quality standards required by the export market.

- Absence of significant governmental support in the area of credit and marketing: Until recently, farmers in St. Kitts/Nevis, unlike their counterparts in several of the other countries studied, have not been the beneficiaries of subsidized credit. Commercial bank rates to private sector borrowers ranged from 8 to 12% per annum, and the lending rate to agriculture was 11% over the last decade. In the case of the state-owned Development Bank of St. Kitts and Nevis, the annual interest rate over the same period on agricultural loans was 11%, whilst the rate on loans to the other sectors ranged from 10 to 11%. From the above, it would therefore seem that in terms of institutional credit, farmers in St. Kitts/Nevis were, if anything, at a disadvantage compared to borrowers in other sectors of the economy. The lack of secure tenure and the aging farming population may also have contributed to this state of affairs.

Finally, with respect to the marketing of farm output, the State similarly did not play a significant role. The Central Marketing Corporation was established in 1973 to promote and facilitate the marketing of non-sugar agricultural output and to import essential farm inputs, but since 1985 this Corporation appears to have abandoned its developmental role and has instead become a major importer and retailer of food and non-food items. Most marketing functions have been carried out by the farmers themselves, who sell directly to consumers at the public market. In the case of some "larger farmers", produce is sold to huskers, who in turn sell to ultimate consumers.

From the foregoing it is evident that the State has not played a significant role in stimulating the development of non-sugar agriculture in St. Kitts/Nevis. Since the beginning of the 1990's, however, agricultural diversification has been identified by the Government as a major element of its overall national development plan. This diversification thrust is intended to lessen the economy's dependence on sugar, and has been influenced by concern about the country's steadily increasing food import bill. The major objectives of this thrust are:

- to increase food production in order to improve the nutritional status of the community;

- to increase net foreign exchange earnings through agricultural production for import substitution and export;
- to generate employment opportunities and increase income; and
- to increase food reserves, thereby improving the local capability to cope with natural disaster and other emergencies.

The specific policies pursued include:

- the regulation of land tenure through the establishment of an Agency for the issuance of long-term leases to farmers;
- the focussing of attention on soil conservation given the dangers posed by erosion;
- the establishment of some 300 small- to medium-sized farms with appropriate security of tenure;
- encouraging increased production of tubers and vegetables for purposes of import substitution. Measures to be adopted in this regard include the provision of technical assistance with respect to post-harvest handling and the upgrading of quality standards in keeping with the requirements of the tourist industry. In particular this programme targeted the planting of 200 acres of vegetables by 1991;
- promotion of the export of root crops to ethnic markets in the UK, Holland and Canada by utilizing the services of the Caribbean Agricultural Trading Company (CATCO);
- the provision of subsidized financing and credit to 300 farmers to enable them to undertake the requisite investment in capital works and soil conservation. Such loans will include a one year grace period and will be over a term of 8 years;
- the provision of a revolving fund to cover part of the annual working capital requirements of the participating farmers. Up to 80% of the annual production costs would be provided for;
- the provision of technical assistance and training to participating farmers in the areas of agricultural technology and marketing; and
- the strengthening of the planning and executing capability of the Department of Agriculture through the funding of positions in the areas of statistics and chemistry, and the provision of a soil analytical laboratory.

Finally, it will be noted that developments in the sugar sub-sector were excluded from consideration here as these were not considered germane to the objectives of the present study.

2.8 Policy Measures in St. Vincent and the Grenadines

Bananas and root crops dominate agricultural production. Between 1985 and 1989, banana production increased from 41.9 to 68.0 thousand metric tonnes - a record level - and earnings increased from EC$45.6 to EC$89.9 million. In 1989, banana accounted for 45.4% of total domestic exports and 60% of agricultural exports. The rapid growth in banana production over this period was attributed to (i) a 36% real increase in the farm-gate price between 1985 and 1989 and (ii) a switch in production from root crops to bananas and other non-traditional products. This switch occured as a result of the decline of the Trinidad and Tobago economy. This country represented the main export market for St.Vincent's crops.

The increased production of bananas was brought about through an expansion in acreage from 6,700 acres in 1985 to 10,000 acres in 1989. Average yields also increased from 6.3 tonnes to per acre 6.8 tonnes per acre over this period.

St. Vincent and the Grenadines achieved world renown for the production of arrowroot. Over the 1985-89 period however, arrowroot production suffered a sharp decline from 434 to 109 metric tonnes. This decline resulted from, among other things, a slump in world prices from EC$3,500 per tonne in 1983 to EC$2000 per tonne in 1987.[2] Other contributory factors included poor financial management of the umbrella Arrowroot Association, technological constraints, and strong competition from Brazil.

Food Crops: The crops referred to here include sweet potatoes, dasheens, eddoes, tannias, yams and plantains. These crops constitute the staple diet of most Vincentians, and in addition, have contributed significantly to the country's export earnings over the years. In fact, in 1985, exports of these crops, primarily to the Trinidad and Tobago market, overtook bananas as the country's main export earner. Since then, however, the export market for these crops has contracted significantly, with a concomitant decline in output. Notwithstanding this declining export demand, the production of these crops continues to be significant, due to the continued strong domestic demand.

Tree Crops: In 1987, a Tree Crop Unit aimed at encouraging the expanded production of avocado, mangoes and citrus in particular, was established in the Ministry of Agriculture. On

[2] The Eastern Caribbean (EC) dollar is pegged to the US dollar at a rate of exchange of approximately EC$2.7 = US$1

the whole, however, the establishment of this Unit failed to make any significant impact on the production of these crops. Coconut production, which was once quite important, also declined due to the onset of diseases and a shrinking and uncertain export market.

Vegetables: Prior to 1980, St. Vincent and the Grenadines produced a wide variety of vegetables for local consumption and export. However, the expansion in banana production in the 1980s resulted in substitution away from vegetables and this has led to declining production and increased imports.

Livestock: This sub-sector remains largely underdeveloped, with a contribution to GDP in 1989 of only 1%. Between 1985 and 1989 the importation of beef and pork increased from approximately EC$0.5 million to EC$1 million and at the same time, chicken imports increased from EC$5.75 million to EC$9.11 million. Attempts are now being made to develop the livestock sub-sector, and these will be outlined in a subsequent section.

Agriculture dominates the economic life of St. Vincent and the Grenadines, and thus, the development and performance of the sector is important to the country's overall development. Accordingly, it is the objective of the Government in its 1991-1995 Development Plan to promote the growth and diversification of the sector in order to increase production, farm income, export earnings, employment, the generation of domestic savings, and the fostering of linkages with the tourist sector.[3] There are, however, several constraints to agricultural development; these include: (i) the limited availability of cultivable land, (ii) the proliferation of many small farms (less than 2.5 acres) which precludes the realization of economies of scale, especially in the case of those export crops facing international competition, (iii) marketing and price uncertainty, especially with respect to the export commodities, and (iv) the vulnerability of much of the agriculture of St. Vincent and the Grenadines, particularly in the case of the banana industry, to natural hazards such as hurricanes.

Based on the foregoing, it is evident that the development of agriculture will continue to rest on improving the utilization of the limited cultivable acreage, and on the development of an integrated approach to production and marketing.

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[3] St. Vincent and the Grenadines Development Plan 1991-1995, "Balanced Growth and Sustainable Development". Central Planning Division, Ministry of Finance and Planning, (1992).

The policy framework for agriculture therefore has the following goals:

- the development of a viable small farm sector through a programme of land reform, beginning with the divestiture of selected under-utilized estates;
- the diversification of the export base and increased import substitution through the introduction of new crops;
- raising productivity and output of bananas and other crops through the adoption of improved cultivation practices, and the provision of credit;
- the improvement of marketing practices and marketing infrastructure so as to expand agricultural exports;
- the increase in livestock and fish production;
- the reorganization of the Ministry of Agriculture to enable it to plan and execute policies, programmes and projects more effectively.

The strategies proposed and/or adopted in furtherance of these goals and objectives are outlined below. These will be presented under the headings of Land Reform, Diversification, Marketing, Credit and Agro-Processing. A discussion of the commodity-specific measures will also be presented.

Land Reform: Eight (8) large estates were to be sub-divided and divested to small farmers. This, it was reasoned by the Government, would have served to improve significantly the well being of a large number of rural households, and facilitate agricultural diversification. In total, over 8,000 acres that were considered under-utilized were to be made available for this purpose. Farms, ranging in size from 2 to 7 acres, were being distributed to farmers on a lease-purchase basis. The philosophy underlying the determination of farm size was that it should be able to generate enough income (EC$,7000 in 1987) to support an average sized family.

Diversification: Given the possible erosion of preferences under the EEC/LOMÉ Banana Protocol and the dominance of bananas in the country's agricultural sector, the need for further diversification of the sector was accorded priority status by the Government of St.Vincent. To this end, the production or expanded production of the following crops has been encouraged: sweet potatoes, eddoes, carambola, pineapple, pawpaw, mangoes, pepper, cut flowers and vegetables. This increased production of fruits and vegetables was meant to satisfy the growing local demand for these commodities which had been supplied to a large extent through imports particularly in the tourism sector. Increased livestock and fisheries production is also being promoted. To facilitate this process, considerable extension efforts, including the establishment of demonstration plots utilizing the recommended technology, have been undertaken. Improved

of demonstration plots utilizing the recommended technology, have been undertaken. Improved credit and marketing services have also been made available to farmers.

Marketing: Efforts to improve marketing focussed upon:

- identifying export markets;
- improving the integration of the productive and marketing effort of farmers; and
- encouraging the increased domestic consumption of locally produced agricultural commodities.

Through the OAS Land Settlement and Agricultural Diversification Project, funding will be provided for assistance in the areas of post-harvest management techniques, quality improvement, grading and storage, the provision of information on the shipping of agricultural commodities, and the management of marketing depots. Assistance will also be given to the Marketing Corporation in the area of agricultural exporting. Funding for marketing development is expected to be obtained through the International Fund for Agricultural Development (IFAD) Small Holder Development Project.

The Ministry of Agriculture also plans to institutionalize marketing intelligence, information and research within its Planning Unit in order to assist farmers with market identification and exploration. Thus, the imports of agricultural products will be monitored and controlled so as to encourage farmers to expand their production for the domestic market, especially for the tourist industry.

Major infrastructural development in the area of marketing will also be carried out. This development includes the construction of feeder roads and the construction of cargo storage facilities at the airport and the port in Kingstown as well as a new Grenadines jetty. A new abattoir and meat market are also to be constructed.

Credit: The major sources of formal credit to farmers included the Banana Growers Association and the Development Corporation. Commercial banks and credit unions also provided agricultural loans. Most farmers, however, relied on informal sources of credit, and were therefore forced into a cycle of low investment, low productivity and low incomes. The provision of greater access to formal sources of credit was therefore seen as a key element of the development strategy, and to this end, a global line of credit from the Caribbean Development Bank was negotiated and is being administered by the Development Corporation.

Agro-Industry: This constituted an important element of the development strategy. The promotion of agro-industrial development was expected to support the country's import substitution and export promotion thrust, by increasing value added to the sector. The promotion of agro-processing was also viewed as a means of reducing unemployment and increasing the income generating capacity of the agricultural sector.

To aid in this process, the Government, through the Ministry of Agriculture, has embarked on a programme to:

- assess the technical and economic feasibility of processing various agricultural products, particularly lime, peppers, grapefruit, coconut, ginger and passion fruit;
- ensure quality control and standards for locally manufactured foods and beverages; and
- provide the necessary technical assistance to private sector firms wishing to engage in agro-processing activities.

Priority Commodities: The thrusts in the areas of land reform, diversification, marketing, credit and agro-industry have primarily targeted bananas, root crops and vegetables, arrowroots, floriculture, tree-crops, livestock and the fishery sub-sector. In the case of bananas, emphasis was placed on improving cultivation practices, packaging and handling, with the objective of improving output from 6 to 7 tons per acre to 10 tons, thereby increasing the competitiveness of the industry. Improving quality to strengthen the market appeal of Vincentian bananas was another area of emphasis.

The principal measures adopted in the case of root crops centered on technology improvement and transfer through the establishment of demonstration plots and other extension related activities. Attention was also focussed on improving post-harvest practices and marketing. The support provided to the arrowroot industry included the refurbishing of factories and the provision of a subsidy to producers.

The tree-crops targeted for support and expansion were julie mango (500 acres), avocado (500 acres), passion fruit (200 acres) and carambola (200 acres). The support provided included nursery development and the distribution of subsidized planting material. Marketing assistance and technical training through extension services were also provided.

Floriculture was also the focus of much attention. An association of floriculturalists and ornamental horticulturalists was formed, and this was intended to provide the focus around which

the industry would develop. Specific governmental assistance took the form of the establishment of demonstration plots; the introduction of new, exotic varieties; the collection of nursery stock of important local varieties; and the provision of technical assistance, marketing and training.

The agricultural development strategy of St. Vincent also focussed on the livestock, fisheries and forestry sub-sectors, but the details in respect of these will not be outlined as they are not of particular relevance to this study.

Because of the high proportion of the workforce it employs and its considerable contribution to export earnings, the agricultural sector will continue, for the foreseeable future to be crucial to the development of St. Vincent and the Grenadines. The Government has therefore adopted a pro-active stance to the sector, and toward this end, has formulated, and is in the process of implementing, a comprehensive development plan. In this plan, there has been much emphasis on diversification to reduce the dependence of the economy on banana production, especially given the uncertainty surrounding continued access to the U.K. banana market. This development plan also focussed attention on, and contained specific policy measures with respect to marketing improvement, credit, land reform and agro-processing. Specific measures in respect of the major commodities were adopted and these are identified and described in this study.

SECTION III: IMPACT OF GOVERNMENT POLICY: NOMINAL AND EFFECTIVE PROTECTION

3.1. Introduction:

One of the primary objectives of this study is the measurement of the impact of government intervention on both producers and consumers of the commodities selected for study. Such intervention has been effected through various policy measures which have been described earlier. Specifically this study seeks to measure the degree of protection accorded to producers and/or consumers, as well as the associated net effect which these policy measures have had on their welfare.

In this section, the protective effect of policy interventions in the agricultural sector will be addressed. The concepts of nominal and effective rates of protection are outlined and the results obtained from their application presented. The impact of policies on producers' and consumers' welfare will be reported in Section IV.

3.2. Measurement Methodology:

Protection coefficients compare domestic prices to border prices. These ratios indicate the extent to which domestic price policy protects domestic producers from the influence of foreign competitors and in the process, generates incentives to domestic producers or consumers. Because this protection can be positive or negative it acts as an indicator of the likely impact of policy induced incentives on the allocation and efficiency of resource use. Thus, protection coefficients are both diagnostic and prescriptive in that they characterize the policy setting in broad quantitative terms.

3.2.1. The Nominal Protection Coefficient:

The nominal protection coefficient is defined as the ratio of the domestic price of a commodity to its border price.[4] The border price is defined as the price in the international market converted into local currency using the appropriate exchange rate.

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[4] Tsakok, Isabelle. Agricultural Price Policy: A Practitioner's Guide to Partial Equilibrium Analysis, pp 56-59.

The nominal protection coefficient (NPC) is given by the following:

$$NPC_j = \frac{P_j^d}{P_j^b} \qquad (1)$$

where: P^d = domestic price;

P^b = border price i.e. foreign price x exchange rate, thus the border price is the foreign price in domestic currency;

j = commodity under study.

The border prices used in this study can be regarded as the "non intervention price" i.e. the price that would prevail in the absence of policy induced distortions. The domestic price is defined as the retail price in the domestic market which includes the effect of intervention.

The nominal protection coefficient (NPC) can assume a range of numerical values. If NPC > 1, domestic producers or intermediaries are receiving a higher price after intervention than they would without intervention. This implies positive protection for producers but represents a tax on consumers. If NPC < 1, then the reverse holds in that consumers are protected whereas producers are taxed. This would serve as a disincentive to production of the commodity in question. If NPC = 1, then the structure of protection is neutral. In general, the greater the divergence of the NPC from unity, the greater the price distorting effect of policy and the greater or lesser is the incentive or disincentive to decision makers (producers and consumers).[5]

3.2.2 Effective Protection Coefficient:

Several of the policy measures implemented by governments affect not only the price of outputs but also the price of inputs used in the production process. Thus it is desirable to measure the impact of policy, not only at the output level as reflected in the NPC, but also at the production end. A measure which facilitates this is the Effective Protection Coefficient (EPC) or its alternative, the Effective Rate of Protection (ERP). The effective protection coefficient of a commodity is the ratio of the value added in domestic prices to the value added in border prices.[6]

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[5] Tsakok, op. cit, pp 56-59.

[6] Tsakok, op. cit, pp 79-80.

It should be noted that the difference between the NPC and the EPC is that, in addition to output prices, the EPC also takes into consideration the cost of traded inputs.

The EPC is expressed as follows:-

$$EPC_a = \frac{V_a^d}{V_a^b} \qquad (2)$$

where: V_a^d = value added in domestic prices; and
V_a^b = value added in border prices.
a = commodity under study.

Value added in Equation (2), refers to the value that is added through the production process over and above the value of the traded inputs, i.e. it is the return to the primary resources, for instance land, labour and capital, and to the non-traded intermediate inputs such as seeds and planting material.

The EPC can also be expressed in percentage form, as the effective rate of protection (ERP), where:

$$EPR = \frac{V_a^d - V_a^b}{V_a^b} \times 100 = (EPC - 1) \times 100 \qquad (3)$$

The EPC can assume a range of numerical values. If EPC > 1, then domestic producers are receiving a greater return on their resources as a result of government policy than they would in the absence of intervention, (i.e. they are enjoying positive protection which represents a potential incentive to expand production). Conversely, when EPC < 1, producers are receiving reduced returns as a result of policy intervention, (i.e. they would be better off paying and receiving border prices instead of domestic prices for both inputs and output) and this represents a potential disincentive to production. On the other hand, when EPC $= 1$, the structure of protection is neutral and producers are neither protected nor discriminated against as a result of the policies pursued. The results of the analysis utilizing the above equations are presented below.

3.3. Results and Analysis

3.3.1. Antigua

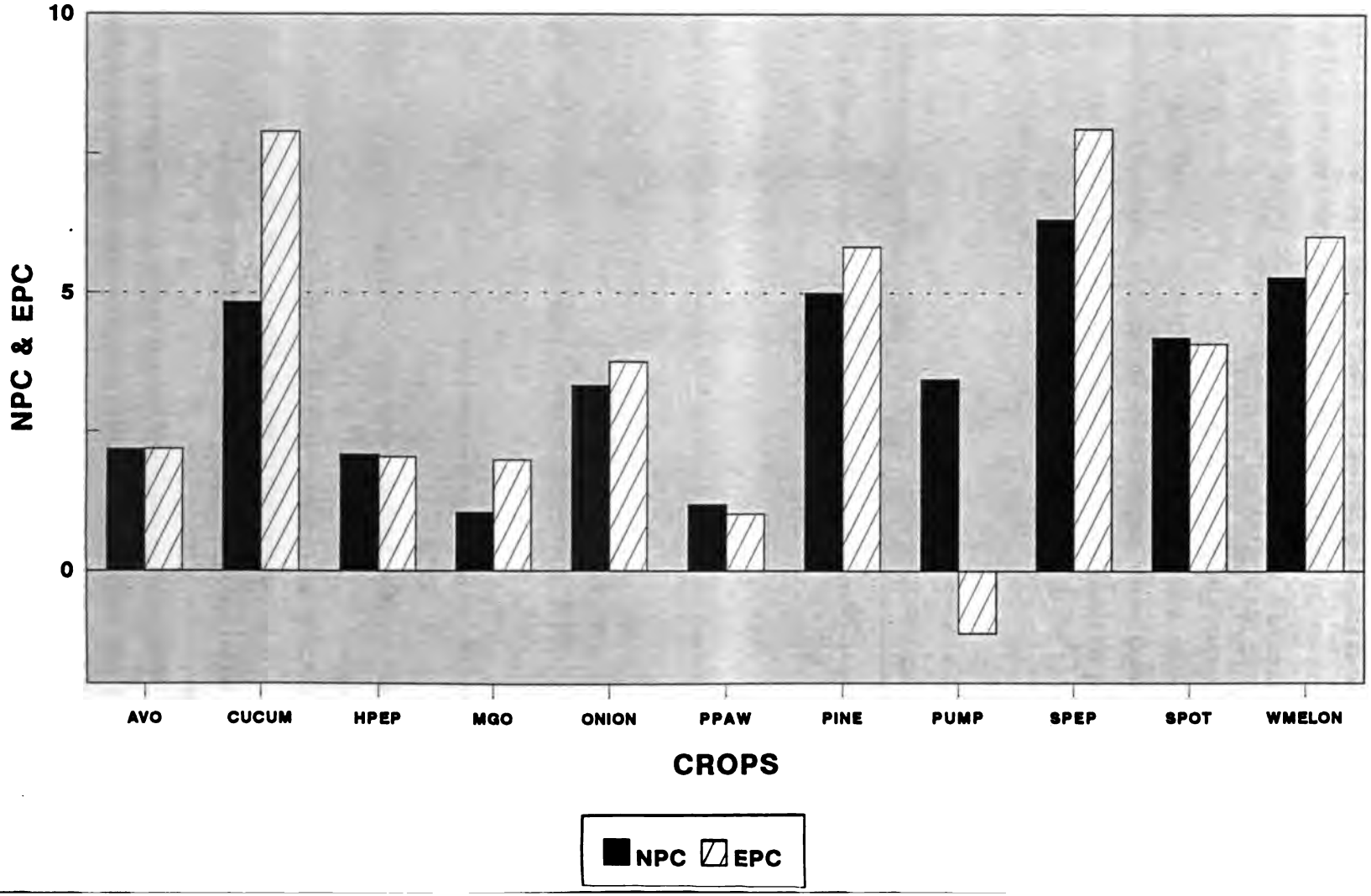
The Nominal and Effective Protection Coefficients for Antigua are given in Table 1 and are illustrated graphically in Figure 1. The NPC is greater than 1 for all commodities. Producers and other intermediaries are therefore receiving positive protection as a result of government induced policy intervention. Pineapple, watermelon, sweet pepper, sweet potato and cucumber have quite high NPCs which suggest that existing policy measures effectively protect producers of these crops. It will be recalled from Section II, that an expansion in the production of these crops was encouraged by Government.

Table 1: Protection Coefficients - Antigua, 1993.

Crop	NPC	EPC
Avocado	2.18	2.19
Cucumber	4.84	7.89
Hot Pepper	2.09	2.05
Mango	1.05	2.0
Onion	3.33	3.76
Pawpaw	1.19	1.02
Pineapple	5.00	5.83
Pumpkin	3.45	(1.11)
Sweet Pepper	6.32	7.59
Sweet Potato	4.20	4.08
Watermelon	5.29	6.02

The EPC results are quite consistent with those derived via the NPC. Except for pumpkin, the EPCs are all greater than one, indicating that producers in Antigua are receiving higher returns as a result of government policy than they would in the absence of such policy intervention. The ratios of efficiency and protection suggest that producers of pumpkin enjoyed relatively high rates of nominal protection but were taxed when domestic market policies were incorporated. In this case, the EPC is negative since the value added in social prices is negative. This suggests that the country may be losing foreign exchange by engaging in the domestic production of pumpkin. As was the case with their own NPC estimates, the EPCs for sweet pepper, pineapple, watermelon and cucumber are also quite significant.

With the exception of pumpkin, the findings suggest that Antiguan producers are considerably better off under the current policy regime than they would be under a more liberalized trading environment characterized by less policy intervention. The implications for consumers will be examined in Section IV where subsidy equivalents are estimated and analyzed. It is however, noteworthy that the impact of the various policies pursued is consistent with the Antiguan Government's stated policy objective of increasing the production of vegetables, pineapples as well as the other crops studied.


10
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NPC & EPC
AVO
CUCUM
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MGO
ONION
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PINE
PUMP
SPEP
SPOT
WMELON
CROPS
NPC
EPC

3.3.2. Dominica

The NPCs and EPCs for Dominica are shown in Table 2, (illustrated graphically in Figures 2a and 2b). As stated previously, Dominica is actively encouraging agricultural diversification to reduce its dependence on bananas, and in this regard, has adopted a number of policies aimed at encouraging the expanded production of several non-traditional crops. The results in Table 2 indicate, however, that the outcome of the incentives provided to producers of the crops studied, is somewhat mixed. NPCs greater than 1 were obtained for all the crops studied with the exception of passionfruit and ginger lily. The NPCs were low except for passionfruit, sweet potato, ginger, avocado, and breadfruit. It therefore appears that existing policy measures were fairly limited in their ability to provide protection and incentives to producers of non-traditional crops.

Table 2: Protection Coefficients - Dominica, 1993.

Crop	NPC	EPC
Anthurium (red)	1.23	0.74
Anthurium (pink)	1.07	0.98
Avocado	1.55	1.20
Breadfruit	1.55	1.18
Dasheen	1.34	0.97
Ginger	1.93	1.49
Ginger Lily (Pink)	0.70	0.78
Ginger Lily (Red)	0.81	0.72
Golden Apple	1.00	0.17
Mango	1.24	1.18
Passion Fruit	5.63	1.97
Pawpaw (Papaya)	1.09	0.82
Sweet Potato	2.50	1.90
Tannia	1.10	0.75

In terms of the EPCs, the derived coefficients were less than 1 for approximately half of the commodities examined (except for avocado, ginger, passionfruit, mangoes, sweet potato, and breadfruit). It is noteworthy that these crops were previously found to be enjoying positive protection as indicated by the NPC measure.

The EPC results suggest that the net impact of government policies on avocado, ginger, passion fruit, mango, sweet potato and breadfruit systems, was to allow value added in private prices to be 20%, 49%, 97%, 18%, 90% and 18%, respectively, higher than without such policies.

The fact that the EPCs are all less than the NPCs and in the case of golden apple and passion fruit substantially so, is indicative of the off-setting impact of domestic intervention measures, acting predominantly through intermediate input markets on producers of non-traditional agricultural commodities.

A comparison of the results establish some basis for concluding that government policies have had a detrimental effect on factor markets and this in turn has had an adverse impact on producers of the commodities included in the study.

Generally, the results indicate that only in six of the fourteen commodities investigated were producers better off compared to the no-policy scenario. For producers of the other eight commodities, government policy did not appear to have had a positive impact. This finding is not entirely surprising however, since it will be recalled that in the case of Dominica, a major weakness of agricultural policy was thought to be its lack of focus.

FIGURE 2a: DOMINICA

NPCs and EPCs

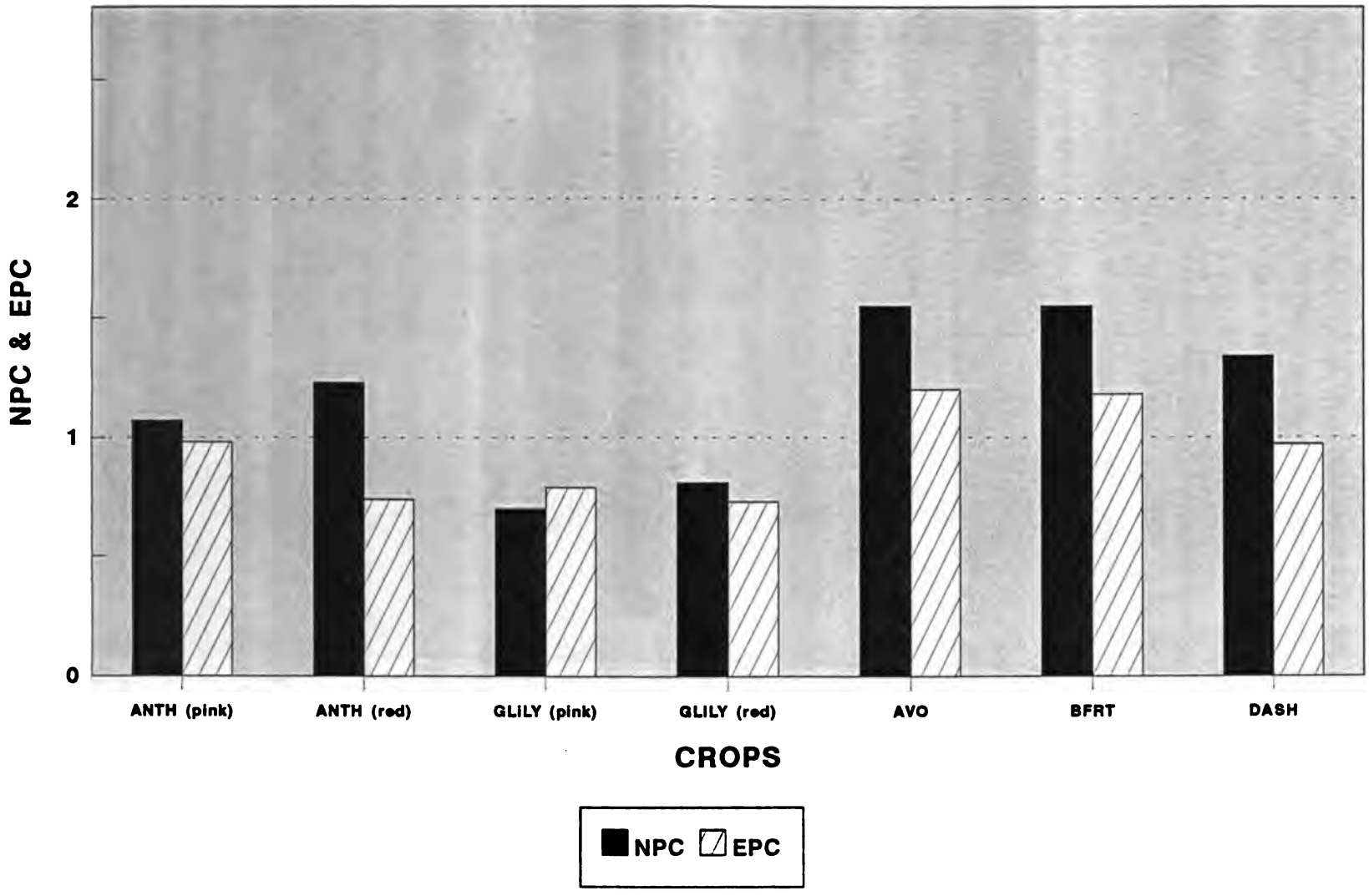
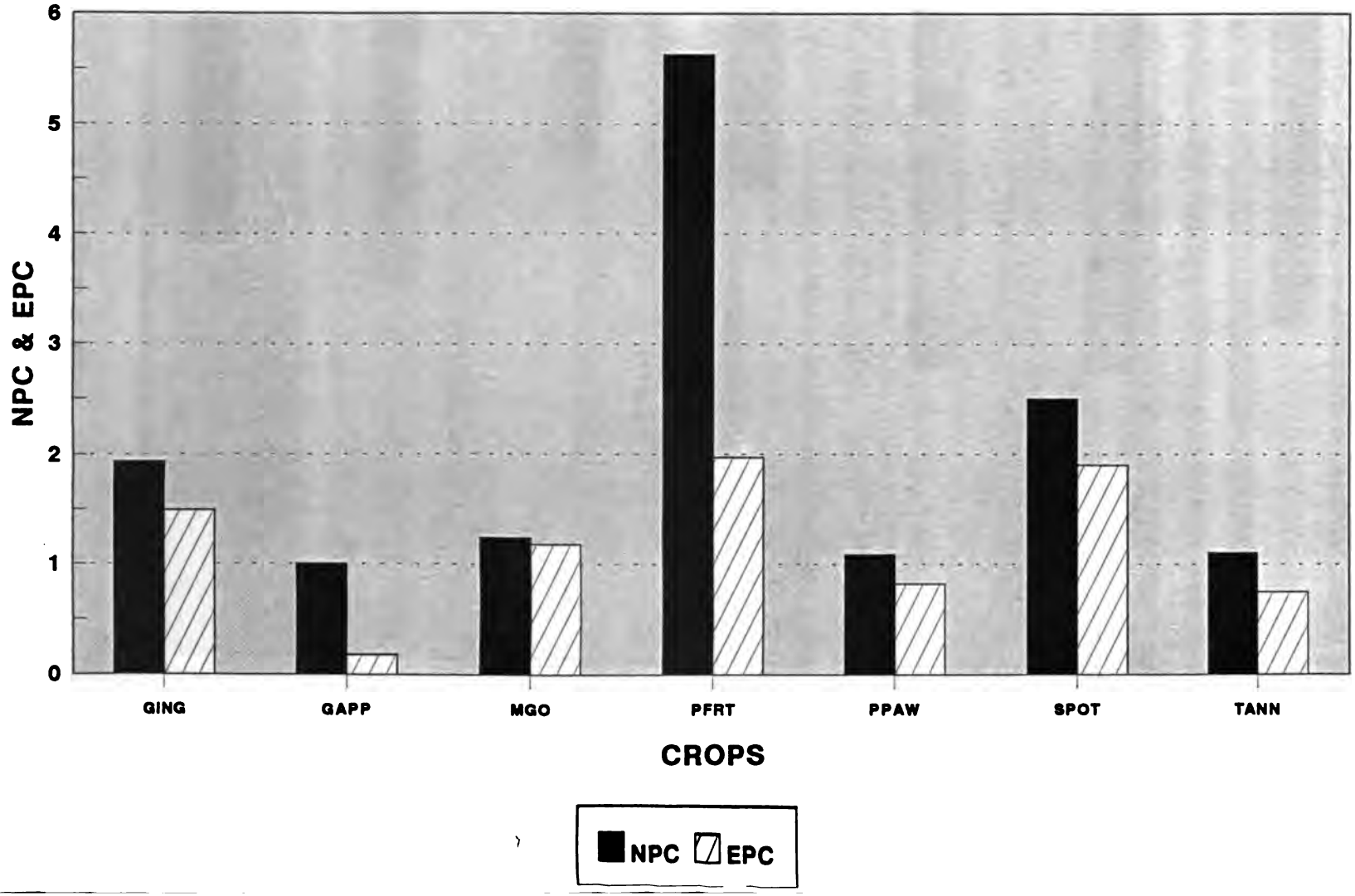


FIGURE 2b: DOMINICA
NPCs and EPCs



3.3.3. Grenada

The NPCs and EPCs for Grenada are presented in Table 3. These are also shown graphically in Figure 3. It is evident that the NPC is greater than unity for all of the 13 crops investigated, suggesting that the policies relating to the production of these commodities caused the increase of private prices above the social price. Thus, in terms of output prices, Grenadian producers and intermediaries enjoyed a higher price as a result of the policies pursued, than would have been the case in the absence of government border intervention measures. The NPCs for passion fruit and soursop are quite high, being 4.38 and 3.23 respectively, indicating that these crops are particularly heavily protected. Other crops enjoying significant protection are anthurium, avocado, tannia and dasheen, all with NPCs of over 2.0.

Table 3: Protection Coefficient - Grenada, 1993.

Crop	NPC	EPC
Anthurium	2.19	-0.97
Avocado	2.70	0.87
Breadfruit	1.21	0.03
Cashew	0.31	-0.68
Dasheen	2.27	-0.86
Ginger Lily	1.75	-7.25
Golden Apple	1.85	1.53
Mangoes	1.51	0.47
Passion Fruit	4.38	4.64
Pawpaw (Papaya)	1.16	0.53
Soursop	3.23	1.39
Tannia	2.32	1.31

NPCs in excess of unity were obtained for golden apple, ginger lily, breadfruit and pawpaw, signifying positive protection, and by implication, positive incentives to producers and other intermediaries. In this case the domestic retail price resulting from intervention is higher than the price for output that would otherwise prevail. Paradoxically, however, this positive protection is countered significantly by input market policy induced measures, as is indicated by the estimated EPCs which are less than 1 for 8 of the 12 commodities studied.

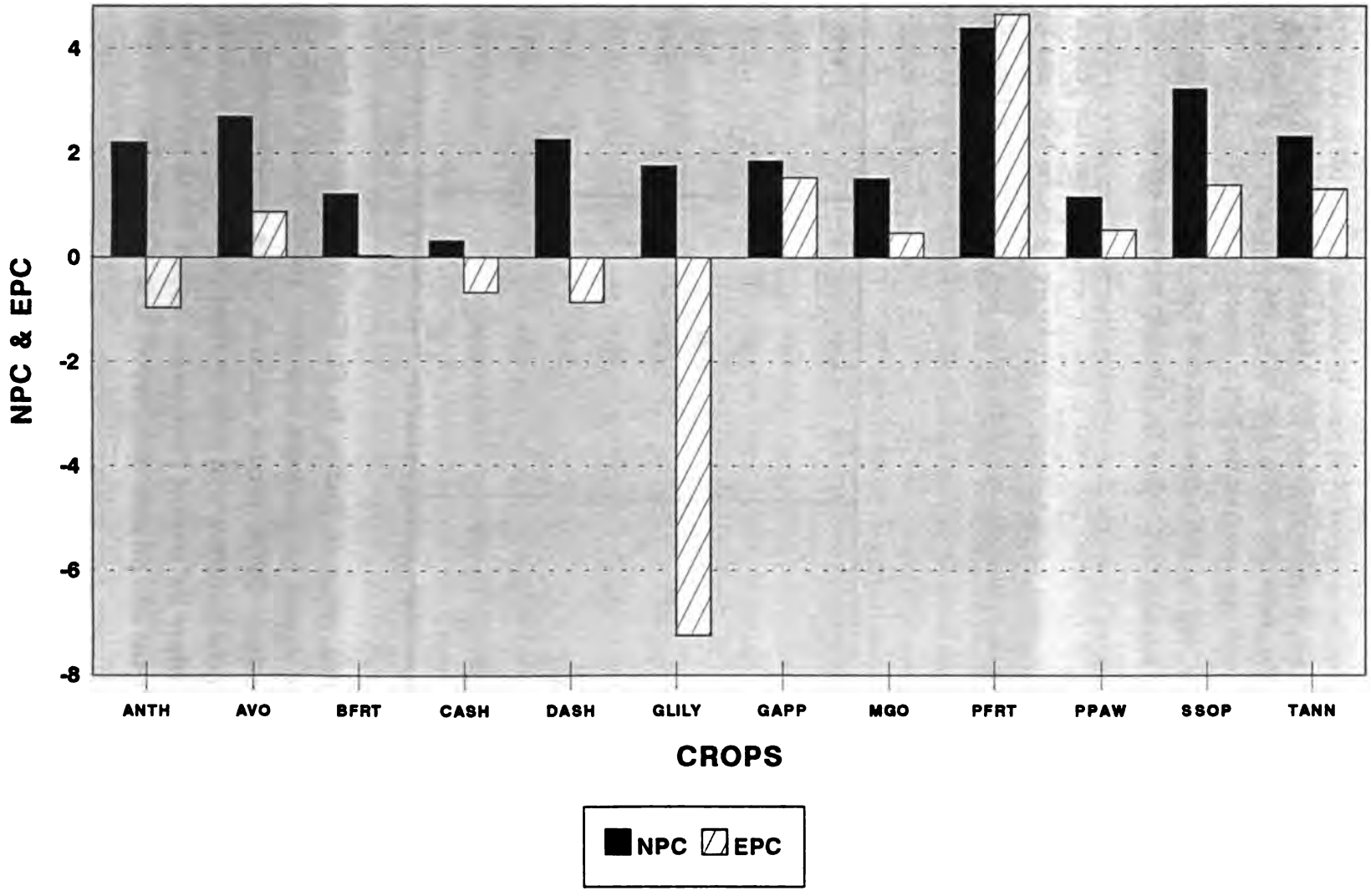
The negative values of the EPC for anthurium, cashew, dasheen and ginger lily suggest that the value added in social prices is negative. This indicates that the economy is losing foreign exchange by engaging in the domestic production of these commodities, as the cost of traded inputs exceed the non-intervention price of output. Only in the case of soursop, tannia and golden apple are the EPC's >1, suggesting that farmers are better off as a result of the input and output policies being pursued by the Government.

Thus, it would appear that the macroeconomic and other policies being pursued are impacting negatively on the costs of inputs used in production. The fact that for all the commodities, the differential between the domestic retail price and the farm gate price is rather substantial, would seem to indicate that considerable marketing inefficiency may exist, especially since the level of marketing service offered is, in general, quite minimal.

In summary, it would appear that, producers in Grenada in general, are not substantially better off as a result of the government policies being pursued. Only in the cases of passion fruit, soursop, tannia and golden apple was there evidence of the policies impacting positively on producers.

FIGURE 3: GRENADA

NPCs and EPCs



3.3.4. St. Kitts/Nevis

The results for St. Kitts/Nevis (Table 4 and Figure 4) suggest that in every case except cotton and pumpkin, both the NPCs and EPCs are substantially greater than 1. With the exclusion of these two commodities the NPCs ranged from 2.46 to 7.64 for white potato and tomato respectively, and the EPCs from 2.02 to 8.14. The EPC for tomato was highest, which is in keeping with the high NPC value for this crop reported earlier.

Based on both the NPC and EPC values, it would appear that present policy measures result in quite high levels of protection for producers. Both the NPC and EPC estimates for cotton indicate that the commodity is slightly taxed, due to government induced policy measures.

Table 4: Protection Coefficient - St. Kitts/Nevis, 1993.

Crop	NPC	EPC
Cabbage	5.13	5.63
Carrot	3.23	2.84
Cotton	0.88	0.82
Onion	2.94	2.64
Pumpkin	3.75	-1.35
Sweet Potato	2.50	1.64
Tomato	7.64	8.14
White Potato	2.46	2.16
Yam	4.46	2.86

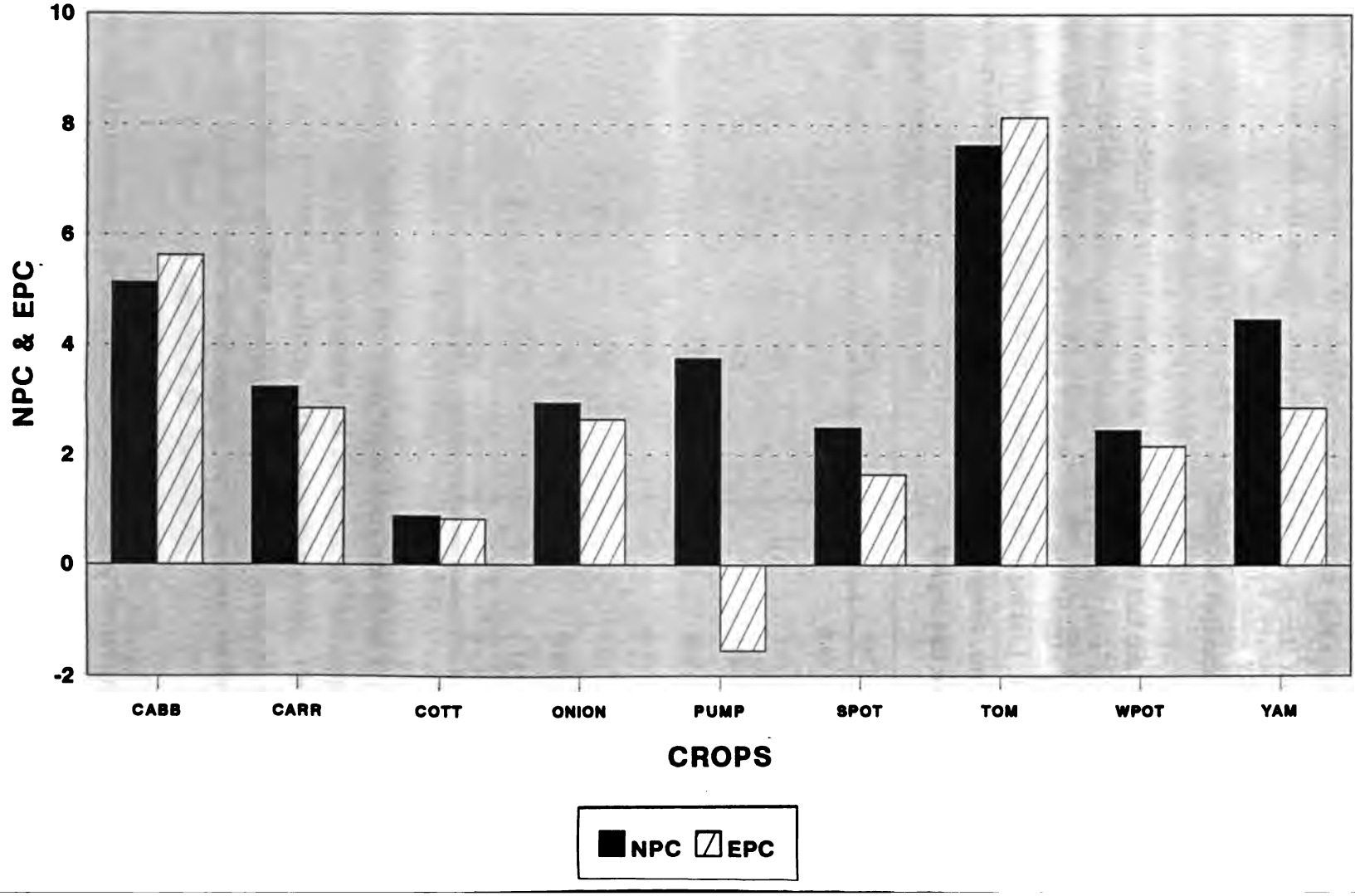
As reported earlier in Section II, St. Kitts/Nevis does not have a particularly long tradition of State support for non-sugar agriculture and the extent of this support still remains less than in the other OECS member countries. This notwithstanding, the results for St. Kitts/Nevis are quite consistent with those obtained for other OECS countries such as Grenada and Dominica, where the level of Government support for agriculture has been considerably more significant and also predates such support in St. Kitts/Nevis.

In principle, an examination of the policies pursued in St. Kitts/Nevis agriculture suggests that they are more narrowly focussed than in several other OECS member countries. The policies pursued by this country also appear to exhibit a degree of internal consistency, beyond

that of other OECS member countries. Thus, these policies may very well be responsible for the consistency between the NPC and EPC estimates which indicates that producers, by and large, are heavily protected. This consistency may also be attributed to the simplicity of the policies pursued as well as the limited number of such policies/programmes presently in place, a feature which arguably minimizes the occurence of one policy measure "sterilizing" another. To the extent that this is so, it would therefore suggest the need to rethink the approach to agricultural policy formulation in many of the other OECS member States with a view to simplifying the measures adopted.

However, the fact that non-sugar agriculture in St. Kitts/Nevis is presently quite heavily protected, coupled with the fact that the conceived expansion in production and exports has been noteably elusive, suggest that other aspects critical to the success of such measures may have been overlooked. Linking policy measures to efficiency criteria, improving coordination and monitoring systems, along with re-examining the choice and mix of diversification commodities, will be critical in this regard.

FIGURE 4: ST.KITTS/NEVIS
NPCs and EPCs



3.3.5. St. Lucia

Table 5 and Figure 5 present the results for St. Lucia, and it is evident that, except for mango and pawpaw, the NPCs are all greater than one. This indicates both positive protection and potential incentives to producers as a result of policy intervention. The NPCs for passion fruit and pineapple are, however, quite significant, exceeding 2 in each instance.

The EPC results were fairly mixed, with pineapple and passion fruit having estimates in excess of 2. These two commodities, along with avocado and hot pepper received potentially positive incentives as a result of government policy measures, while ginger, dasheen and tannia, pawpaw, soursop and mango were potentially disadvantaged by existing policy measures. Whereas both commodities are highly protected, as is evidenced by the high NPC values, the EPCs are large and negative. This suggests that the potential stimulus to production as indicated by the NPCs is not being transmitted to producers. For these commodities, current government policies appear to be having an adverse impact, acting primarily through purchased inputs. In this regard, the Government needs to increase the efficiency of input marketing and to reduce or remove other forms of implicit duties or taxes on inputs which may exist.

Table 5: Protection Coefficient - St. Lucia, 1993.

Crop	NPC	EPC
Avocado	1.51	1.42
Dasheen	1.98	1.88
Ginger	1.04	0.75
Hot Pepper	1.80	1.73
Mangoes	0.88	0.49
Passion Fruit	6.91	5.63
Pawpaw	0.92	0.67
Pineapple	2.51	2.31
Soursop	1.16	0.47
Tannia	1.80	1.60

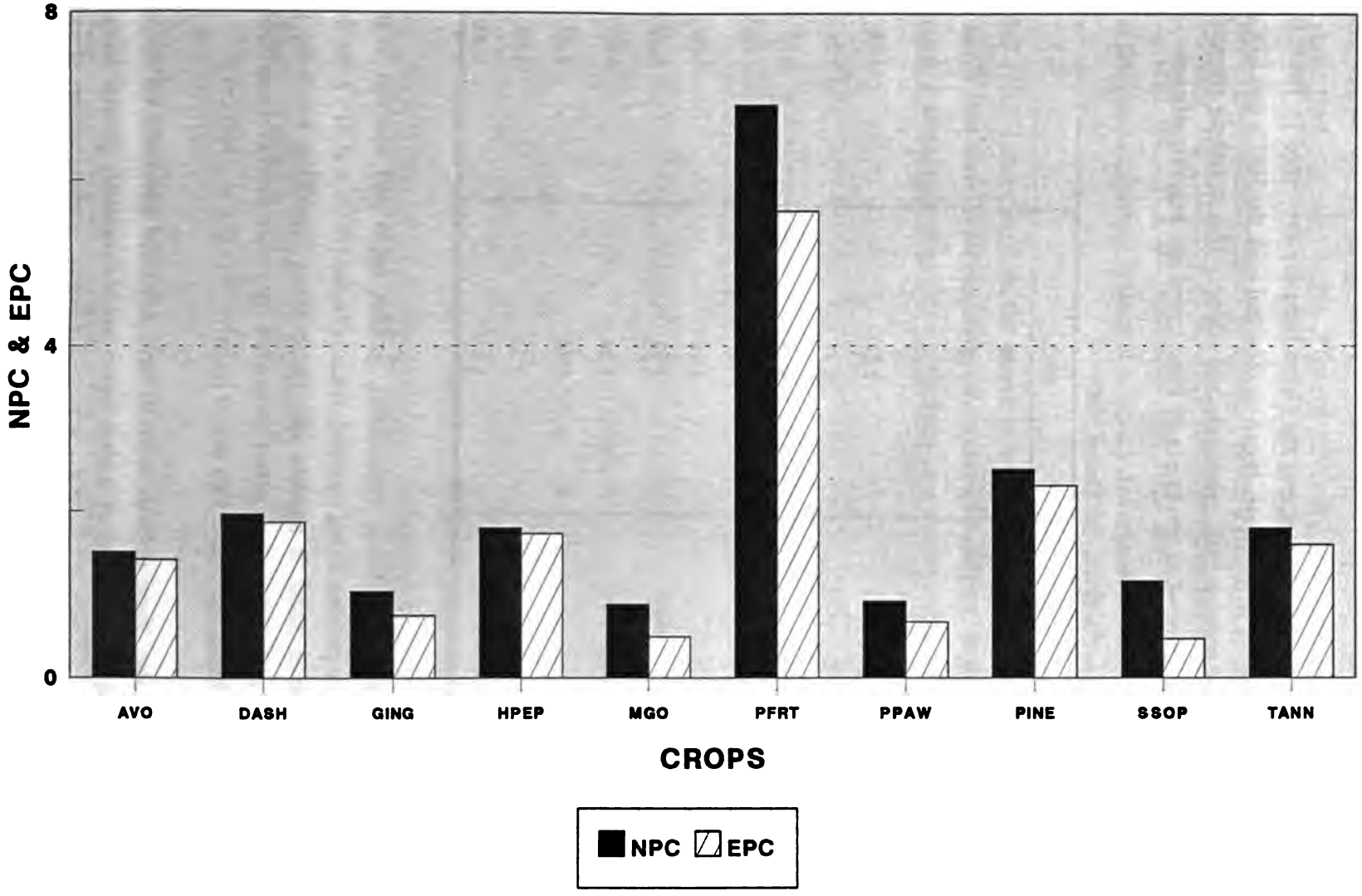
The results for St. Lucia are therefore quite mixed. For several commodities, it does not appear that the intended stimulus to increased production and marketing implicit in the various policy measures implemented by Government, is being transmitted into actual benefits for producers. In these cases, the policies appear to be resulting in "dead-weight losses". To remedy this, a re-examination of existing agricultural policies and programmes, appears to be

warranted. The existence of contradictions and/or policy sterilization in current policies and programmes remains a distinct possibility.

In this regard, the suggested re-examination should focus on simplifying existing policy measures. Attempts should also be made to rationalize existing policies and to discontinue policy measures which are not consistent with the sectors' goals and objectives. The analysis also suggests that a refocussing of St. Lucia's diversification efforts towards the production of commodities for which its production inefficiencies are least, will also prove useful. Such a refocus should also be aimed at ensuring that policy measures are prudently designed.

An examination of the EPC for pineapples and passion fruit, the commodities for which the NPC estimates were largest, indicates that producers benefit substantially from the various government policies and programmes presently in place.

FIGURE 5: ST.LUCIA
NPCs and EPCs



3.3.6. St. Vincent and the Grenadines

The results for St. Vincent and the Grenadines are presented in Table 6 and illustrated graphically in Figure 6. From these, it can be seen that both the NPCs and EPCs are fairly high (in excess of 2) for passion fruit, pineapple and eddoes. This seems to suggest that the policy induced protection afforded to producers of these crops has been significant.

Table 6: Protection Coefficient - St. Vincent, 1993.

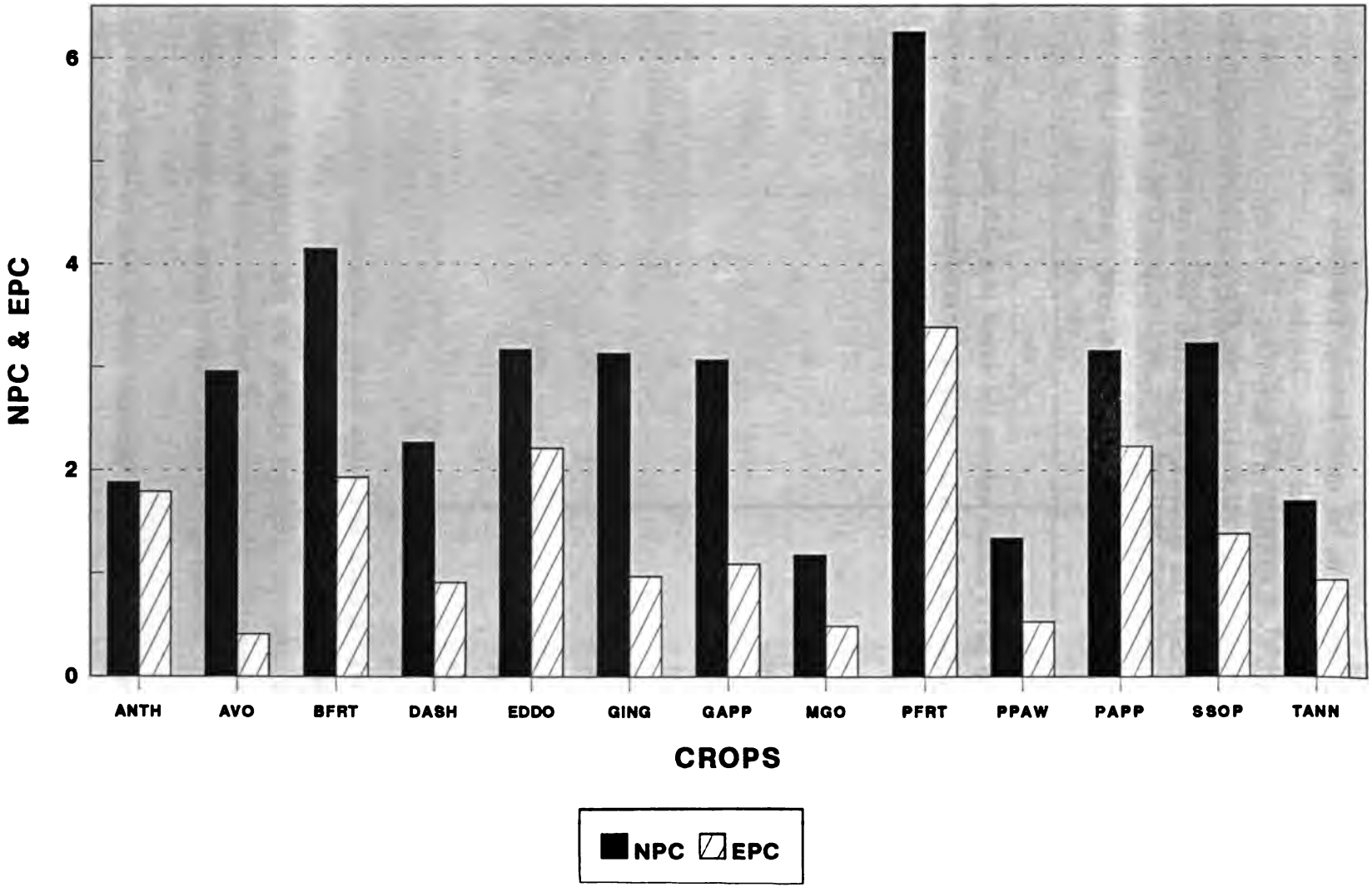
Crop	NPC	EPC
Anthurium	1.88	1.79
Avocado	2.96	0.41
Breadfruit	4.15	1.93
Dasheen	2.27	0.91
Eddoes	3.17	2.21
Ginger	3.13	0.97
Golden Apple	3.07	1.09
Mango	1.18	0.49
Passion Fruit	6.25	3.39
Pawpaw	1.34	0.53
Pineapple	3.16	2.23
Soursop	3.23	1.38
Tannia	1.70	0.93

Producers of breadfruit, anthuriums, golden apple and soursop have also benefitted positively from the policies being pursued, since both the NPCs and EPCs for these crops exceed unity. On the other hand, it appears that the policies regarding avocado, ginger, pawpaw, pawpaw, tannia and dasheen are offset somewhat by factor market distortions, since potential benefits are not being translated into actual positive benefits to producers.

In particular, these policies seem to have impacted adversely on the market for traded inputs where the private costs of traded inputs are substantially greater than the social costs. Thus, there seems to be the need for a comprehensive re-examination of existing policies to correct any conflict and/or contradictions. This re-examination must address fiscal policies in the agricultural sector as well as those affecting other sectors of the economy.

Based on the NPCs, seven of the thirteen commodities investigated for St. Vincent and the Grenadines, appear to be quite heavily protected. This may be due to production inefficiencies, more than any other factor. That the EPCs imply that revenues well above those which would have been obtained in a more competitive environment are realized, may be an indicator of either over-production/under-production, given the narrow constraint of the domestic market. In either case, the efficiency of resource allocation may be improved by adjusting to border prices. That the EPCs are somewhat less than the NPCs may be due to either inefficiencies in the input marketing system or to policy distortions which result in implicit taxes on inputs.

While the EPCs cannot indicate the extent to which enterprises deviate from efficiency levels, it does imply that there is no incentive for producers to adjust, in order to become more efficient, as they are already earning excess revenues as a consequence of the distorted policy environment.


NPC & EPC
0
2
4
6
ANTH
AVO
BFRT
DASH
EDDO
GING
GAPP
MGO
PFRT
PPAW
PAPP
SSOP
TANN
CROPS
NPC
EPC

3.4. Relative NPCs and EPCs by Country:

In those cases where a crop was grown in three (3) or more countries, a comparative analysis of the NPCs and EPCs was undertaken. The results are depicted in Figures 13 to 24 of Appendix III. From the figures, it is evident that both the NPC and EPC vary considerably by crop as well as by countries. The only exceptions are: (1) pineapple, where the NPC is fairly close for Antigua, St. Lucia, and St. Vincent and the Grenadines; (2) dasheen, where the variation in NPC is fairly modest; and (3) breadfruit and mango, where the EPC varied within a fairly narrow band.

On the whole, the analysis clearly indicates that for any given crop there was no consistent relationship between the NPC and EPC values across the countries. Indeed, in several instances, high NPC values did not translate into high EPC values and this was particularly true of Grenada and St. Vincent and the Grenadines. In general however, the NPCs were greater than the EPCs.

The substantial divergence between the NPCs and EPCs across countries is however, somewhat surprising, especially as most of the traded inputs used in production and marketing are imported, usually at concessionary rates of duty and taxes. There are, however, deficiencies in the marketing system for these inputs in most of these countries, which probably accounts for this divergence.

In particular, it is noteworthy that for the crops in question there is no producer association or institutional arrangement which facilitates the procurement of inputs at prices most favourable to producers. Instead, producers are often left without much option but to purchase inputs in small amounts from intermediaries whose margins are often quite high.

SECTION IV: PRODUCER AND CONSUMER SUBSIDY EQUIVALENTS

4.1. Introduction:

In this section, the impact of agricultural policies on producer and consumer welfare will be examined through the use of the concepts of Producer Subsidy Equivalents (PSEs) and Consumer Subsidy Equivalents (CSEs).

The PSE measure for a commodity is defined as the level of subsidy that would be necessary to compensate producers for the removal of all government programmes affecting its production.[7] The PSE therefore represents the value of government support to producers the level of taxation applied against such producers. The CSE, on the other hand, represents the level of subsidy that would be necessary to compensate consumers of the commodity for the removal of the respective government programmes affecting it.

Algebraically, the PSE can be derived as follows:

$$\text{PSE} = \frac{P_{if}^{d} + (s_i - t_i) - P_i^{b}}{P_i^{b}} \tag{4}$$

where,
- P_{if}^{d} = domestic farm-gate price;
- s_i, t_i = subsidies and taxes, respectively;
- P_i^{b} = border price;
- i = commodity i.

Alternatively, the PSE can be expressed as follows:

$$\text{PSE} = \frac{Q[P_d - (P_w)(X)] + I + D}{(Q)\ (P_d) + D} \tag{5}$$

where,
- Q = quantity produced;
- P_d = producer price in domestic currency units;
- P_w = the world price in world currency units;
- X = exchange rate conversion factor;
- D = direct Government payments;
- I = indirect transfers through policies such as input subsidies or exchange rate distortions.

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[7] Timothy, Josling Intervention in Canadian Agriculture:A Comparison of Costs and Benefits Among Sectors, Food Research Institute, Stanford University, Stanford, CA, (March 1981).

As can be seen from equations (5) and (6) above, the PSE is a comprehensive measure that takes into account both direct and indirect subsidies and taxes as well as the consequences of exchange rate policies. In the following analysis, the formulation given by equation (5) will be used. Equation (6) is presented to highlight the fact that indirect transfers including those which may arise from exchange rate policies may also have an impact on the measure.

The Consumer Subsidy Equivalent (CSE) is given by:

$$\text{CSE} = \frac{P_i^b - (P_{ir}^d + t_i)}{P_{ir}^d} \tag{6}$$

where,
P_i^b = border price;
P_{ir}^d = retail domestic price;
t_i = indirect tax;
i = commodity i.

The CSE can be computed on a per unit basis or on the basis of total market consumption. In addition, both the CSE and PSE can be expressed in absolute or percentage terms, which facilitates easy comparisons across both commodities and countries. The PSE and CSE coefficients can take on a range of numerical values. If the PSE is positive (PSE > 0), this indicates that overall, the policies and programmes affecting that commodity serve to increase producer income over and above that which would obtain in the absence of such policies. A negative PSE value (PSE < 0) on the other hand, indicates that producers are in fact losing income as a consequence of the polices and programmes in operation.

Conversely, the CSE for a particular commodity is negative when the net effect of all programmes affecting it results in an increase in the price which consumers pay (consumers are being taxed). A positive CSE on the other hand, indicates positive incentives to consume the commodity (consumers are being subsidized). The PSE and CSE measures are particularly relevant to this study, since the small country assumption is maintained (i.e. that economic agents are price takers with the level of output being too small to influence world prices).

In computing the subsidies and taxes applicable to the individual commodities neither s_i, t_i, I nor D could be individually or explicitly isolated. The effect of these variables is however, reflected in domestic prices which have been suitably adjusted, and as such, this effect is included in the computation of both the CSE and PSE measures.

4.2. Results

4.2.1 Antigua

The PSEs and CSEs for Antigua and Barbuda are given in Table 7 (also shown graphically in Figure 7). The results indicate that the PSEs are positive for all commodities and that sweet pepper has the highest PSE of 545%.[8] Other crops with substantial PSEs are watermelon, pineapple, cucumber, pumpkin, onions and sweet potato. In the case of mango and pawpaw, the effect of the various policies pursued, both on producers and consumers, has been negligible as is reflected by the relatively low values of the PSE and CSE estimates.

The CSEs for the other crops are all negative and substantial, indicating considerable welfare losses for consumers of these commodities. Tariff and other import controls are the major policy instruments responsible for this loss of welfare as is evidenced by the large differential between border and domestic retail prices on the one hand, and domestic retail and farm-gate prices on the other.

Table 7: Consumer and Producer Subsidy Equivalents - Antigua, 1993.

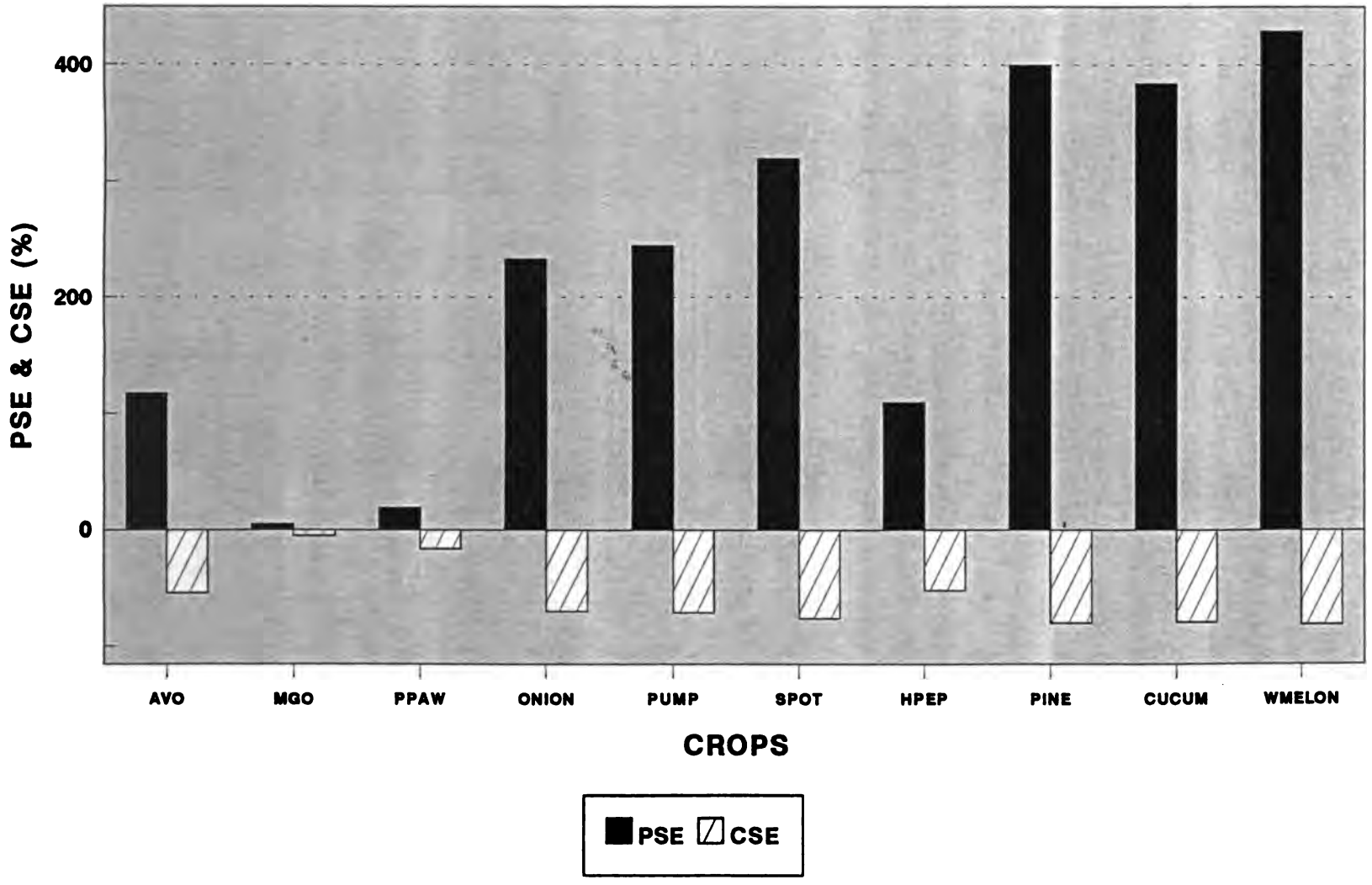
Crop	PSE (%)	CSE (%)
Avocado	118	-54
Cucumber	384	-79
Hot Pepper	109	-52
Mango	5	-5
Onion	233	-70
Pawpaw	19	-16
Pineapple	400	-80
Pumpkin	245	-71
Sweet Pepper	545	-93
Sweet Potato	320	-76
Watermelon	429	-81

[8] Because of scaling problem, the data for sweet pepper were not shown on the graph in Figure 7.

Based on the derived PSEs, it seems reasonable to conclude that the policies being pursued, (previously outlined in Section II), have had a positive impact on producers. It is important to recall that the measures adopted in support of these crops were basically centered around the subsidization of production, both directly and indirectly. In some instances, subsidized credit, water, and planting material, as well as other support measures, were also provided, which the evidence suggests have resulted in net-benefits being transferred from consumers to producers.

In summary, the analysis suggests that both the tariff and non-tariff measures adopted in support of the production of selected agricultural commodities in Antigua/Barbuda have resulted in considerable income transfer to producers. The analysis also indicates that this has occurred largely at the expense of consumers and taxpayers.

FIGURE 7: ANTIGUA
PSEs and CSEs



4.2.2. Dominica

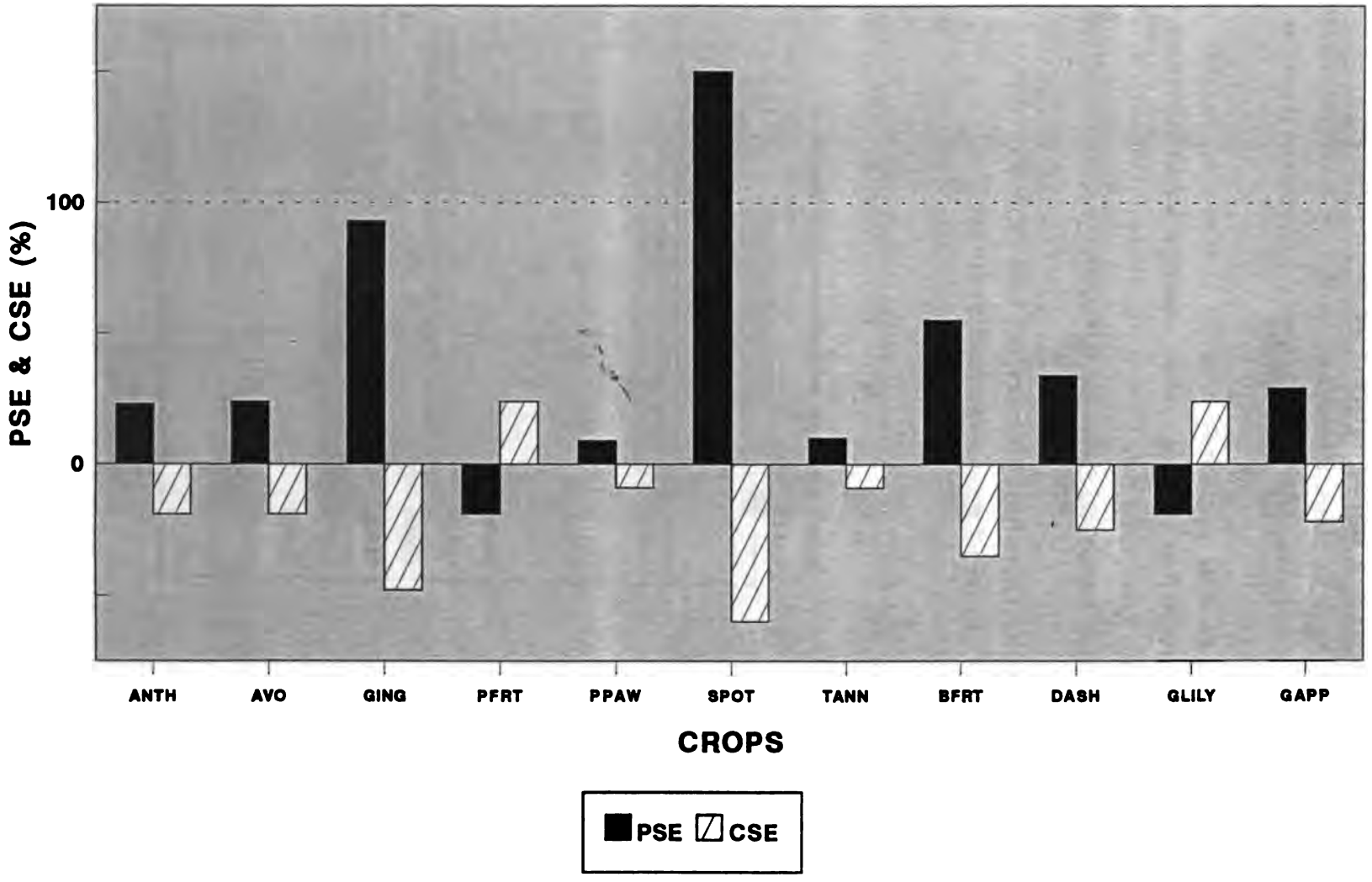
The results for Dominica are presented in Table 8 and Figure 8. From these, it is evident that except for ginger-lily and passion fruit the PSEs are all positive and range in value from 7% for pink anthurium to 150% for sweet potato. With the exception of these two commodities, producers have benefitted as a result of the policies and programmes in operation. The fact that diversification of agricultural production constituted one of Dominica's principal policy objectives was indicated at an earlier stage of this analysis. To this end, a number of measures aimed at encouraging the production of select agricultural crops have been adopted. These measures entailed both direct and indirect transfers to producers. For instance, subsidies were provided on some inputs, and credit was also available on concessionary terms. It is therefore not surprising that except for two instances the PSEs for the commodities investigated are positive.

An evaluation of the CSE results indicates that all values are negative except for passion fruit and ginger-lily. Thus on the whole, Dominican consumers of these commodities pay higher prices under the present policy regime than they would have under a more liberalized trading environment.

Table 8: Consumer and Producer Subsidy Equivalents - Dominica, 1993.

Crop	PSE (%)	CSE (%)
Anthurium (pink)	7	-7
Avocado	24	-90
Breadfruit	55	-35
Dasheen	34	-25
Ginger lily (red)	-19	24
Ginger lily (pink)	-30	43
Ginger	93	-48
Golden apple	29	-22
Mango	24	-19
Passionfruit	-19	24
Pawpaw	9	-9
Sweet potato	150	-60
Tannia	10	-9

FIGURE 8: DOMINICA
PSEs and CSEs



4.2.3 Grenada

The PSEs and CSEs for Grenada are given in Table 9 and these are highlighted graphically in Figure 9. A striking feature of the results is that the PSEs are all positive whilst the CSEs are all negative. Thus, it would appear that the prevailing regime of policies serves to transfer income to producers at the expense of consumers and taxpayers.

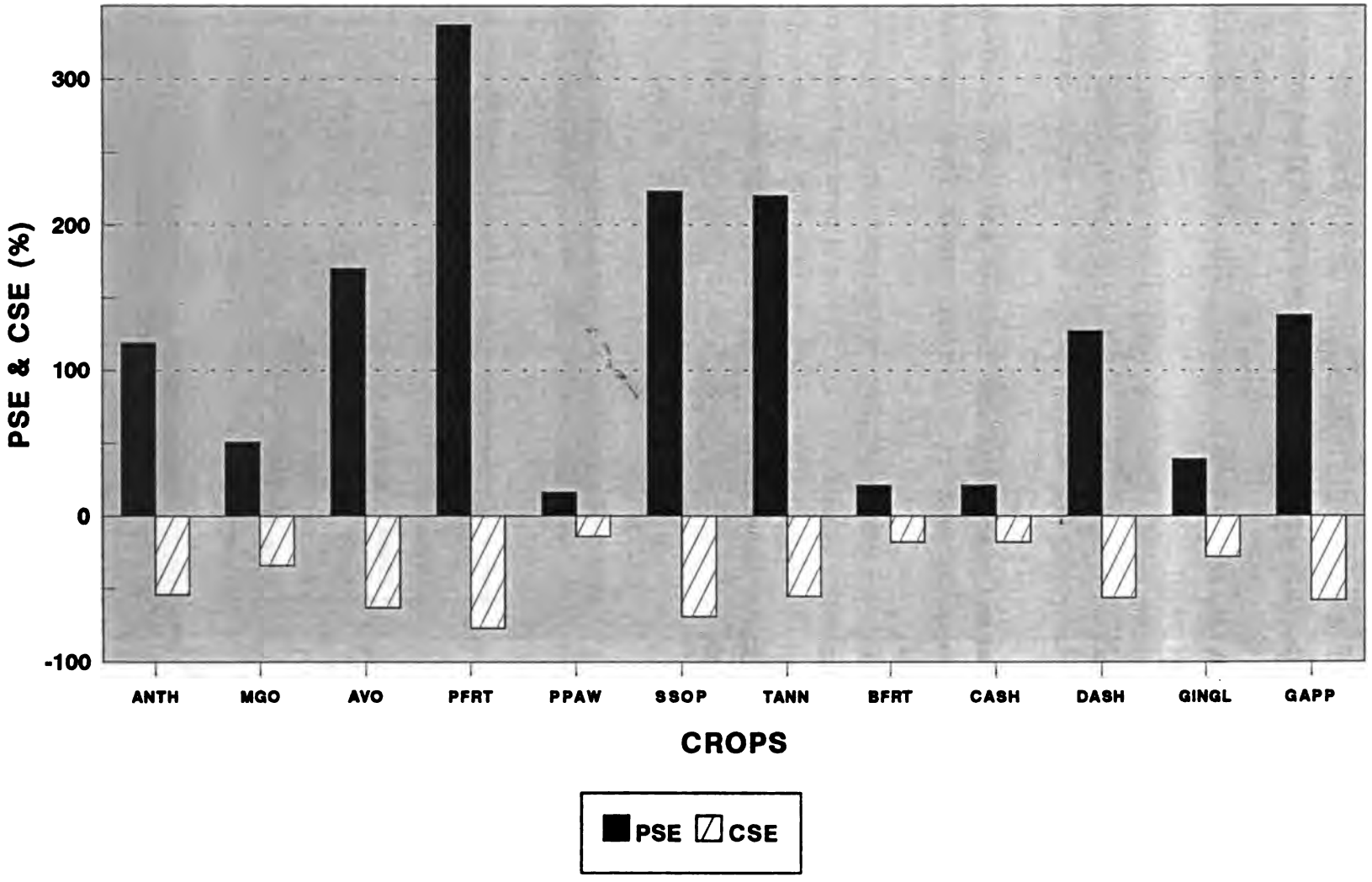
The policies were particularly effective in improving incomes and welfare among producers of passion fruit, soursop, tannia, dasheen, avocado, mango, golden apple and anthurium. On the other hand they were not particularly successful in the case of cashew, breadfruit, pawpaw, mango and ginger-lily producers.

On the whole, Grenadian consumers have been implicitely taxed as a result of the policies pursued, as the CSEs for all thirteen commodities are negative.

Table 9: Consumer and Producer Subsidy Equivalents - Grenada, 1993.

Crop	PSE (%)	CSE (%)
Anthurium	119	-54
Avocado	170	-63
Breadfruit	21	-18
Cashew	21	-18
Dasheen	127	-56
Ginger Lily	-39	28
Golden Apple	138	-58
Mango	51	-34
Passion Fruit	337	-77
Pawpaw	16	-14
Soursop	223	-69
Tannia	220	-55

FIGURE 9: GRENADA
PSEs and CSEs



4.2.4 St.Kitts/Nevis

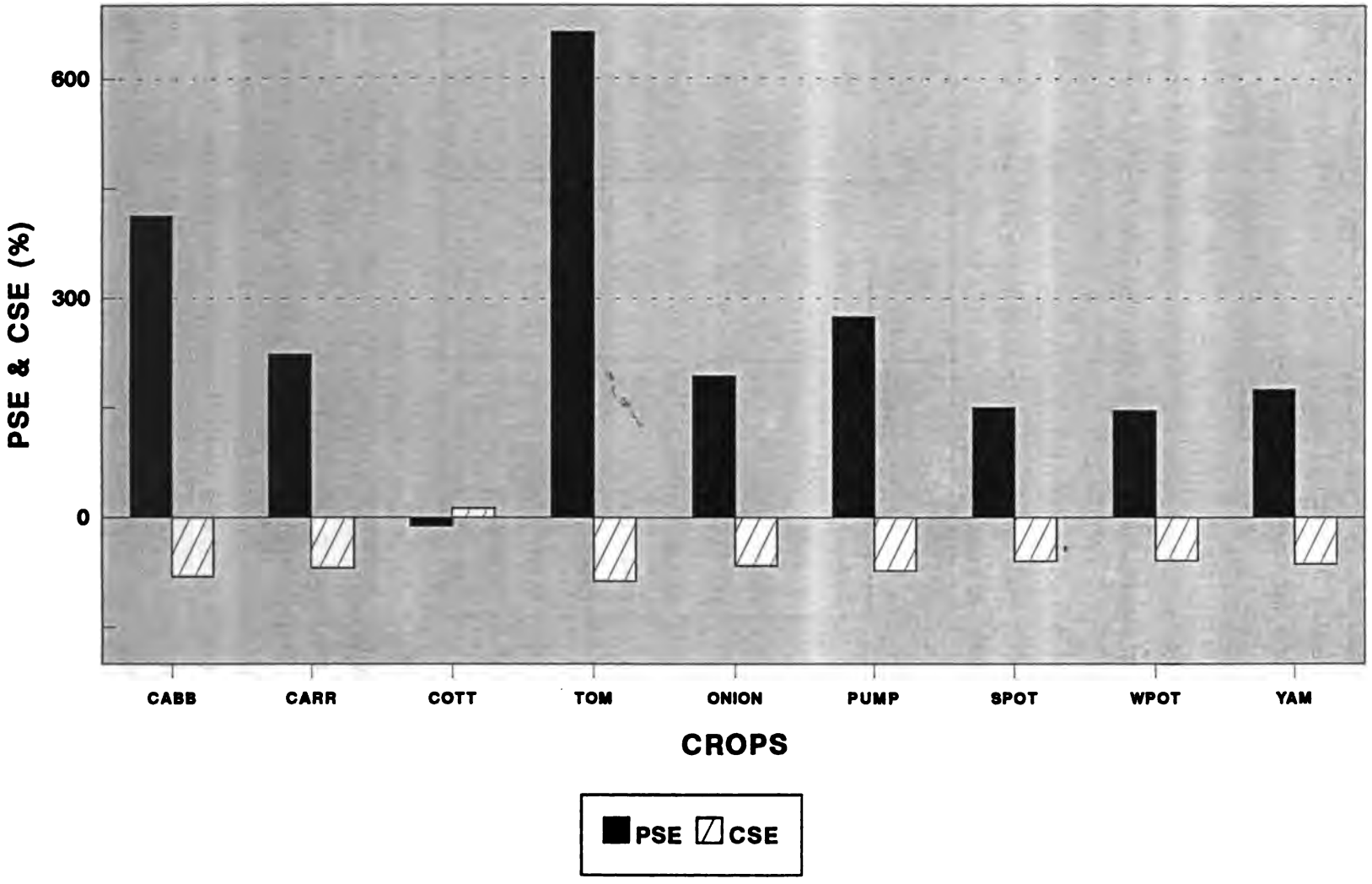
Table 10 and Figure 10 depict the CSE and PSE results for St. Kitts-Nevis. It is evident that with the exception of cotton, the crops under consideration, are being subsidized as is indicated by the positive PSEs. Consumers in St. Kitts/Nevis are however, at a distinct disadvantage as the CSEs are all negative, again with the notable exception of cotton. The PSEs for tomato in St. Kitts/Nevis are particularly high. The other vegetable crops, namely, cabbage, carrots, pumpkin and onion also had substantial PSEs. The impact of policies on producers of root crops (sweet potatoes, white potato, and yam) is also positive although the degree is less substantial. It will be recalled that government policies placed much emphasis on increased vegetable production especially as these crops were thought to possess good potential for import substitution and for forging inter-sectoral linkages with the rapidly expanding tourism sector.

On the whole, these results (both the PSEs and CSEs) clearly indicate that for the commodities investigated there are substantial transfers from consumers and taxpayers to producers. Tariff protection and other forms of import controls have been the instruments of choice for effecting such transfers, as direct government support for non-sugar agriculture in St. Kitts-Nevis is limited. Evidence of the crucial role of tariff and other forms of import control is also clear from an examination of the wedge between CIF and wholesale level prices. While in general, the retail price was found to be at least twice the non-intervention or border price, in the case of tomato this divergence was found to be as large as 7.50 times the border price.

Table 10: Consumer and Producer Subsidy Equivalents - St.Kitts/Nevis, 1993.

Crop	PSE (%)	CSE (%)
Cabbage	413	-81
Carrot	223	-69
Cotton	-12	13
Onion	194	-66
Pumpkin	275	-73
Sweet Potato	150	-60
Tomato	664	-87
White Potato	146	-59
Yam	175	-64

FIGURE 10: ST.KITTS/NEVIS
PSEs and CSEs



4.2.5 St.Lucia

The results for St. Lucia are presented in Table 11 (see also Figure 11). For the eleven commodities investigated the results were somewhat mixed. While the PSEs for passion fruit, and pineapple are substantial, indicating that producers of these commodities have considerable incentive to engage in production, the potential incentive effect of these policies on producers of tannia, dasheen, hot pepper, avocado and soursop, though positive was markedly less so.

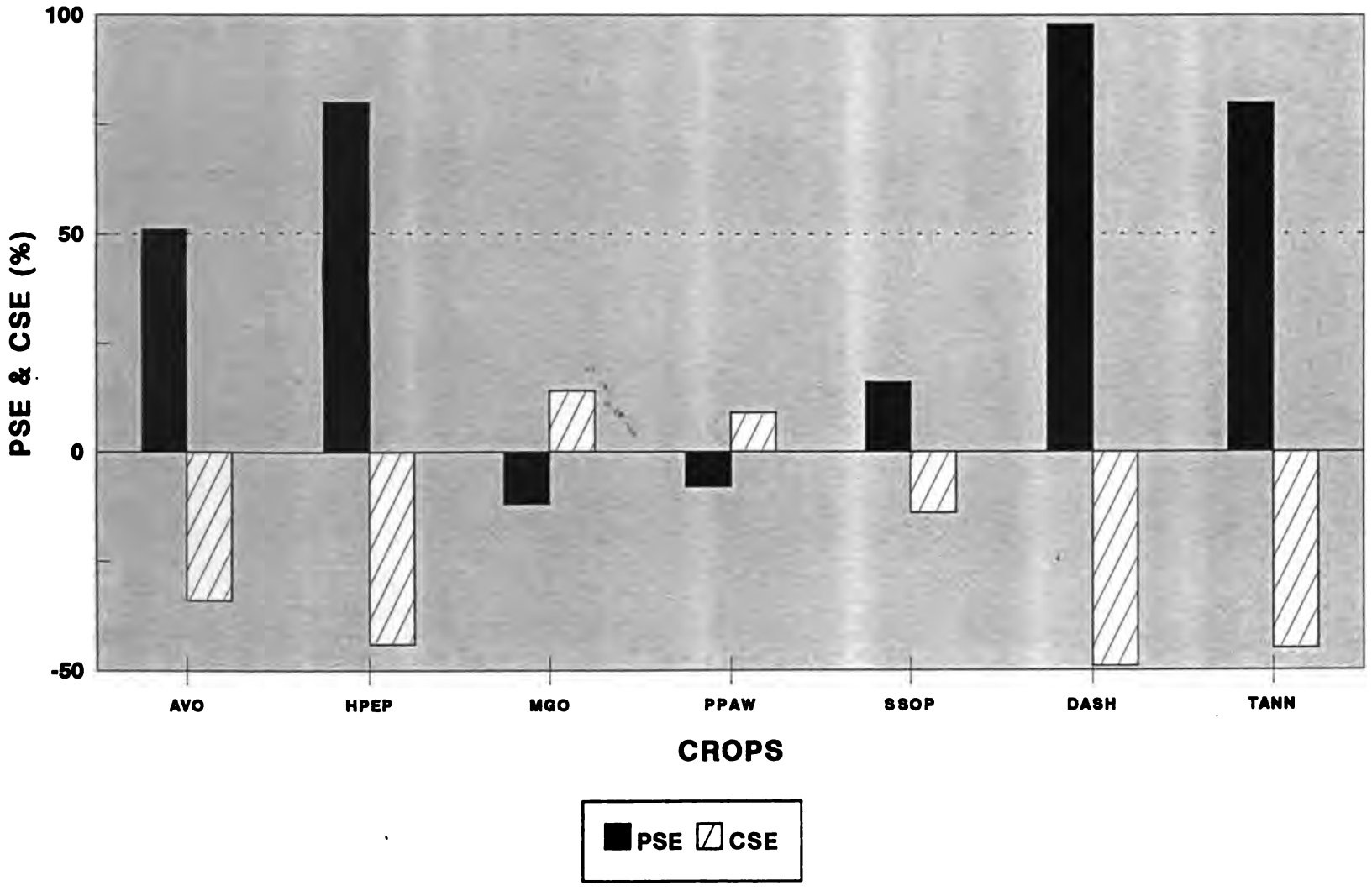
Contrary to this, the current policy regime did not appear to be benefiting producers of mango or pawpaw in a positive manner as the PSE for those commodities was negative. An examination of the base data indicates that the border price for these two crops exceeds by a fair margin the farm-gate or the domestic retail price. Thus the policies being pursued appear to have had a detrimental impact on producers of these two crops, since they are in effect being taxed.

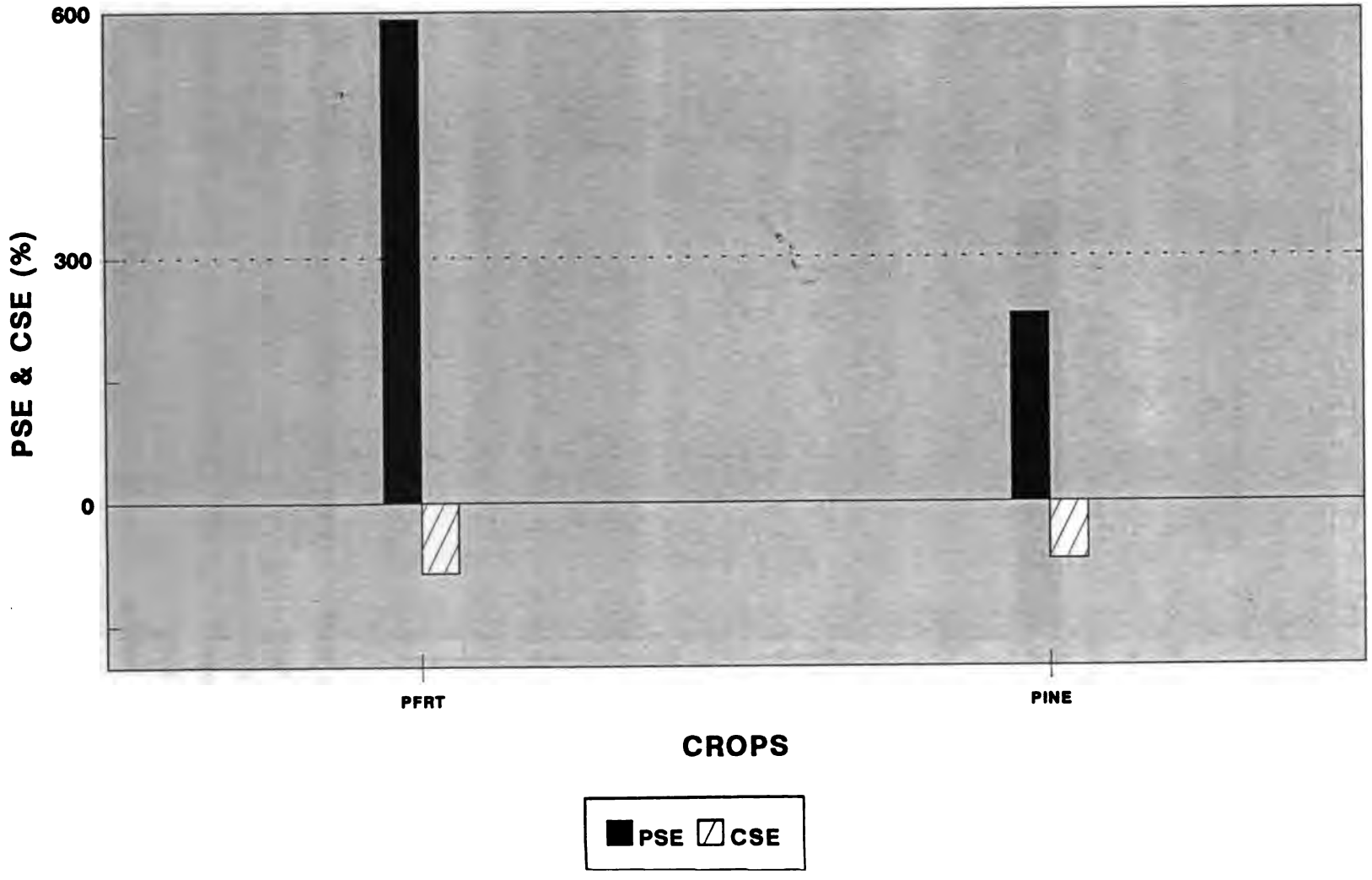
Table 11: Consumer and Producer Subsidy Equivalents - St. Lucia, 1993.

Crop	PSE (%)	CSE (%)
Dasheen	98	-49
Avocado	51	-34
Ginger	4	-4
Hot Pepper	80	-44
Mango	-12	14
Passion Fruit	591	-86
Pawpaw	-8	9
Pineapple	230	-70
Soursop	16	-14
Tannia	80	-45

The results indicate that consumers on the whole, are at a disadvantage since the CSEs for the most part, are negative. The loss of consumer welfare is particularly pronounced in the case of passion fruit and pineapple. The only two instances in which consumers are distinctly better off as a result of the current policy regime are when they make purchases of pawpaw and mango. As with the other OECS territories, in St. Lucia, tariff and/or other forms of import controls are the key policy instruments implemented in the Government's effort to support and stimulate the agricultural sector. The pursuit of these policies nonetheless, has resulted in substantial income transfers from consumers and taxpayers. The analysis indicates that of the amounts transferred, varying proportions, as reflected by the positive PSEs, are redistributed to producers.

FIGURE 11a: ST.LUCIA
PSEs and CSEs




600
300
0
PSE & CSE (%)
PFRT
PINE
CROPS
PSE
CSE

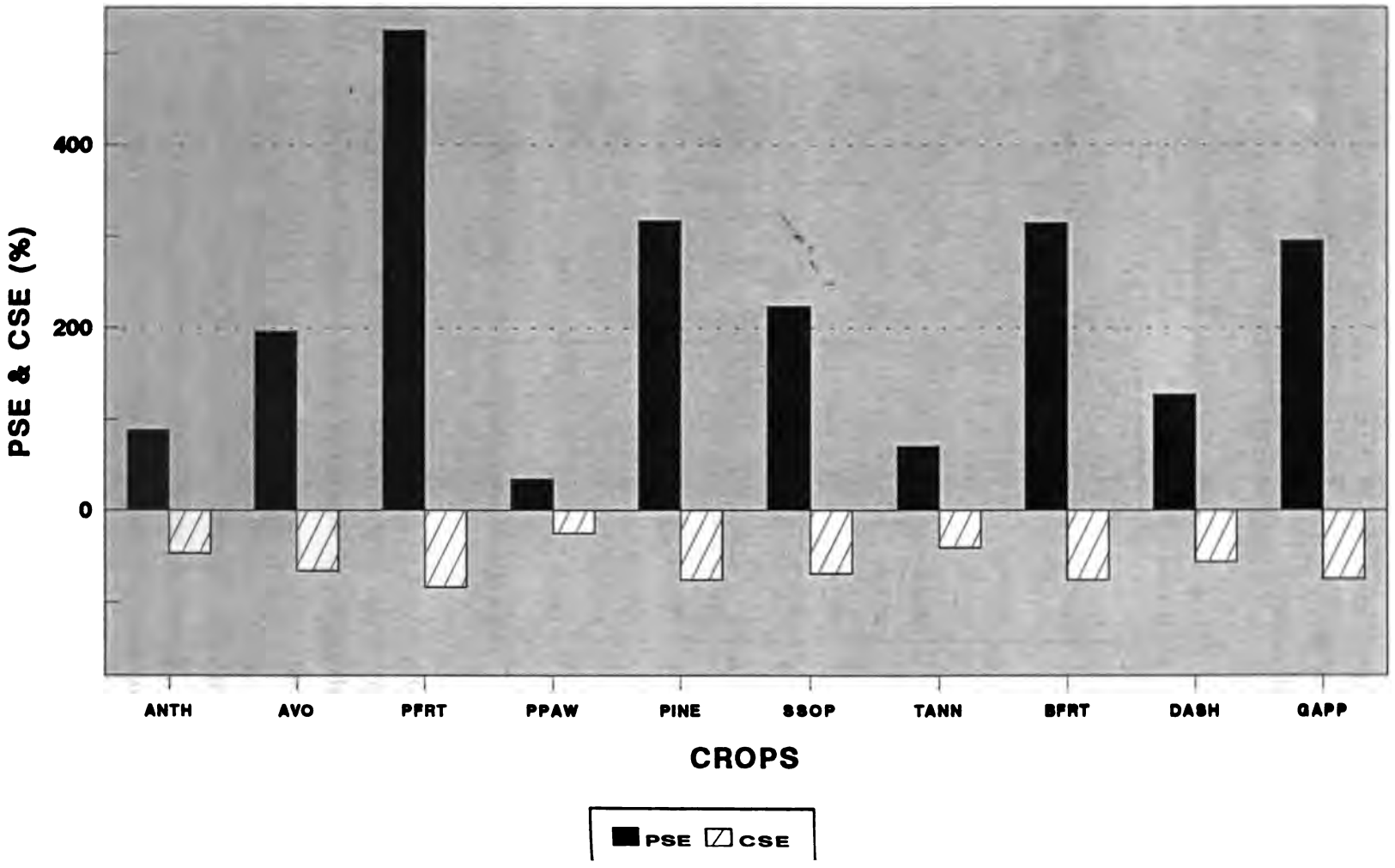
4.2.6 St.Vincent

The results derived for St. Vincent and the Grenadines are given in Table 12 and are further illustrated graphically in Figure 12. All the crops studied exhibited positive PSEs while the CSEs are all negative.

Table 12: Consumer and Producer Subsidy Equivalents - St.Vincent, 1993.

Crop	PSE (%)	CSE (%)
Anthurium	88	-47
Avocado	196	-66
Breadfruit	315	-76
Dasheen	127	-56
Eddoes	217	-68
Ginger	213	-68
Golden Apple	295	-75
Mango	194	-66
Passion Fruit	525	-84
Pawpaw	34	-25
Pineapple	317	-76
Soursop	223	-69
Tannia	70	-41

The Government of St. Vincent and the Grenadines has been quite pro-active in its approach to agricultural diversification. To this end it has adopted a number of policy measures aimed at stimulating the production of a wide variety of non-traditional commodities (including the ones presently under examination). The results derived are therefore not surprising as the positive PSEs clearly signal that the policies pursued have served to transfer income to agricultural producers, thereby improving their welfare. This transfer was greatest in the case of passion fruit, breadfruit, and pineapple. Significant transfers were also provided for producers of soursop, avocado, ginger, eddoes, golden apple, mango and dasheen. The crops for which producer transfers were least were pawpaw, tannia and anthurium. As previously outlined, the CSEs are all negative, indicating that consumers are being taxed. The results also indicate that a substantial part of the payments from consumers is being transferred to producers.


PSE & CSE (%)
400
200
0
ANTH
AVO
PFRT
PPAW
PINE
SSOP
TANN
BFRT
DASH
GAPP
CROPS
PSE
CSE

4.3 Comparative PSEs and CSEs by Country:

In Section 3.5, a comparative analysis of the NPC and EPC measures across countries was undertaken. Similarly, a comparative analysis of the PSEs and CSEs across countries was undertaken and the results are discussed below. As in the previous case, the analysis was done graphically and the results are shown in Figures 25-36 of Appendix IV.

From these figures it is evident that in most cases, the PSEs are positive and the CSEs negative. There are, however, marked variations across countries as well as across crops. This is particularly true of the PSE coefficients. In most instances though, Grenada and St. Vincent and the Grenadines were the countries with the largest PSEs and Dominica the lowest. This would appear to suggest that the policy measures adopted in Grenada and St. Vincent were more instrumental in transferring income to producers (more heavily protected producers) than similar measures introduced in Dominica.

The analysis also indicated that while on average, producers beneffited positively from the policy measures introduced as was indicated by the positive value of the PSEs, producers of passionfruit and ginger lily in Dominica, cotton producers in Nevis and mango and pawpaw producers in St.Lucia lost income as a result of the policy measures impacting on the production and marketing of these commodities.

SECTION V: DISCUSSION OF FINDINGS

5.1. Levels of Protection

5.1.1 NPCs and EPCs

In Table 13, average NPC and EPC estimates are presented for all the crops investigated on a cross-country basis (i.e., these figures represent intra-country averages). The associated average standard deviation (SD) are also reported for each commodity on a country-by-country basis. A grand mean was derived for the NPCs and EPCs for all commodities included in the study across the six OECS member countries.

Table 13: Average Percentage NPC and EPC for Selected OECS Countries, 1993.

	NPC		EPC	
Country	Average Value	Standard Deviation	Average Value	Standard Deviation
Antigua/Barbuda	354	167	376	271
Dominica	162	120	106	46
Grenada	207	101	8	264
St. Kitts/Nevis	367	182	282	257
St. Lucia	205	169	170	144
St Vincent and the Grenadines	288	128	140	83
GRAND MEAN	264		180	

NPC and EPC values are also reported on an individual crop basis in Table 14. The averages reported in both Tables 14 and 15 indicate that the crops investigated benefitted from protection both within and across OECS member countries. There was, however, significant variation in the level of protection across both commodities and countries as was indicated by the relatively large average standard deviations (Table 13).

It is noteworthy that the standard deviation as a proportion of the mean (the coefficient of variation for protection) is reduced when the NPC is averaged on a commodity by commodity basis (Table 14) relative to when it is averaged on an individual country basis (Table 13). The grand mean EPC values are also quite high (Tables 13 and 14) indicating that overall, substantial benefits accrue to producers as a result of present policy support measures.

Table 14: Average Percentage NPC and EPC by Commodity Across Countries, 1993.

	NPC		EPC	
Crop	Average Value	Standard Deviation	Average Value	Standard Deviation
Anthurium (pink)	107	*	98	*
Anthurium (red)	177	40	52	114
Avocado	218	59	122	59
Breadfruit	230	131	105	78
Cabbage	513	*	563	*
Carrot	323	*	284	*
Cashew	31	*	(68)	*
Cotton	88	*	82	*
Cucumber	484	*	790	*
Dasheen	197	38	73	99
Eddoe	317	*	221	*
Ginger	203	86	107	31
Ginger Lily (pink)	70	*	79	*
Ginger Lily (red)	128	47	(326)	399
Golden Apple	197	85	93	56
Hot Pepper	195	14	189	16
Mango	117	21	92	60
Onion	314	20	320	56
Passionfruit	579	93	391	137
Pawpaw	114	14	71	19
Pineapple	356	105	346	168
Pumpkin	360	15	(123)	12
Soursop	254	98	108	43
Sweet Pepper	632	*	759	*
Sweet Potato	307	80	254	110
Tomato	764	*	814	*
Tannia	173	43	115	33
Watermelon	529	*	602	*
White Potato	246	*	216	*
Yam	446	*	286	*
GRAND MEAN	289		224	

* Note:-only one (1) data point, therefore no standard deviation was reported.

In summary, the coefficients of protection exhibited far less variation across commodities than across countries. The exception to this was Antigua where the EPC exceeded the NPC. This appears to have been the result of producers in that country facing higher prices for tradeable inputs than producers elsewhere in the OECS.

The high level of protection indicated by the results in Table 14, was not inconsistent with a priori expectations since each of the six OECS member countries implemented incentive schemes which either directly or indirectly provided support to agricultural production. These incentives, previously outlined in Section II, included both tariff and non-tariff protection measures as well as duty exemptions on imported inputs. While these findings are somewhat in contrast with those obtained for the OECS in an earlier study by Ranis et al. (1982), they are fairly consistent with the general conclusions of a study by the World Bank (1990), as well as with the findings of a recent study conducted for the Planning Institute of Jamaica (1992).[9] [10] [11]

The study by Ranis et al. covered the period 1967-78 and concluded that, in general, agriculture in the CARICOM received negative protection. Only a few of the crops covered by the present study were, however, investigated in the study by Ranis. These include mangoes in St. Kitts, St. Vincent and the Grenadines, and St. Lucia; pineapple in St. Lucia; avocado in St. Lucia; cut flowers in St. Vincent and the Grenadines; and carrots in Antigua.

In the study by Ranis et al. the EPCs were either all negative or less than 1.0 with the sole exception of pineapple in St. Lucia. In the present study, however, Table 15. indicates that in almost every case the NPC was positive, exceeding unity in approximately half the cases, and quite often, by a substantial margin. The only negative EPCs obtained were for anthuriums, cashew, dasheen and ginger lily in Grenada, and pumpkin in St.Kitts/Nevis and Antigua.

In interpreting Ranis's findings it should be borne in mind that not only did his study not cover most of the crops included in the present study, but it covered a period in which CARICOM Governments were emphasizing industrialization and the development of manufacturing and tourism, quite arguably, at the expense of agriculture. The situation has now changed somewhat and many OECS governments are actively promoting agricultural

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[9] Gustav Ranis, et al. Production and Export Incentives in the CARICOM Region, (Georgetown, Guyana: The Caricom Secretariat). May 1982.

[10] The World Bank, The Caribbean Common Market: Trade Policies and Regional Integration in the 1990s, Report No.8881-CRG., March 1990.

[11] Planning Institute of Jamaica, Impact of Agricultural Trade Liberalization on Jamaica, June 1992.

diversification, accompanied by the pursuit of policies aimed at protecting and stimulating the production of non-traditional commodities.

While the World Bank study did not derive protection coefficients for individual commodities, the level of tariff and non-tariff measures among OECS countries was examined by evaluating the general structure of protection associated with levels of value added likely to be attained. Based on these, the most likely level of effective protection for various assumed levels of value-added was projected.

For agriculture in the OECS countries, the World Bank study found the average tariff to be 13.2%, but the associated standard deviation was substantial, indicating considerable variation around the mean.[12] When the effect of other trade charges such as stamp duties and purchase taxes was included, the average level of nominal protection was calculated to increase slightly (ranging in value from 13.2%-15.2%) for most OECS countries, with the exception of Grenada, where the value increased to 41.7%.[13] Overall, the level of nominal protection was found to be particularly low when compared to other Latin American countries such as Costa Rica and Venezuela where nominal protection values for agriculture of 23.3% and 16.4% respectively, were not uncommon.[14] The effect of non-tariff barriers such as licensing requirements was found to be insignificant for OECS member countries.

The World Bank study found that the relatively low level of nominal protection among OECS member states translated into modest levels of effective protection when the level of value added in agriculture was assumed to lie in the medium range, especially since most imported inputs were exempt from import duties. Under this scenario, effective rates of protection of between 44% and 220% were postulated with the lower rate applicable to cases of up to 50% value added at 20% nominal rate of protection.[15] It is informative to note that the above mentioned effective rates of protection translate into EPCs ranging from 144% to 330%, which are in accordance with the average values reported in Tables 13 and 14 of this study.

In the Jamaica study, the commodities for which NPCs and EPCs were calculated were sugar, banana, citrus, cocoa, rice and yam. Of these crops only yam was examined in the

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[12] World Bank Report, op cit, p.20.

[13] Ibid,p.22.

[14] Ibid,p.22.

[15] Ibid, p.25.

present study. Except for yam and banana, the derived NPC and EPC values were all greater than 1.0, averaging 1.55 and 1.72, respectively. In the case of yam, the NPC and EPC were both 0.41, indicating negative protection. This is in contrast to the NPC and EPC coefficient for yam in St. Kitts/Nevis of 4.46 and 2.86, respectively, derived by this study.

In conclusion, these studies seem to support the view that agriculture in the CARICOM region as well as in the OECS sub-region, benefits from the present structure of protection. Considerable variation in the level of protection was found to exist in regard to commodities as well as OECS member countries. Notwithstanding this, the results of the study suggest that a few commodities were implicitely taxed as a result of inappropriate or misguided government policies.

5.1.2 PSEs and CSEs

The average producer and consumer subsidy equivalents for the commodities covered in this analysis are shown in Tables 15 and 16. According to the results (which were derived in a manner similar to that of Tables 13 and 14 and compiled on a cross-country basis) the grand mean PSE was 1.84 while the grand mean CSE was -0.49 (Table 15). When the values were averaged on an individual commodity basis, the grand mean PSE was 2.21 and the grand mean CSE was -0.55 (Table 16). Considerable variation was also found to exist in these results as evidenced by the fairly large standard deviations.

Table 15: Average Percentage PSE and CSE for Selected OECS Countries, 1993.

	PSE		CSE	
Country	Average	SD	Average	SD
Antigua	226	168	-54	26
Dominica	39	40	-13	15
Grenada	125	93	-46	20
St. Kitts/Nevis	323	198	-72	10
St. Lucia	177	176	-48	25
St. Vincent and the Grenadines	217	150	-62	17
GRAND MEAN	184		-49	

Table 16: Average Percentage PSE and CSE by Commodity Across Countries, 1993.

	PSE		CSE	
Crop	Average Value	Standard Deviation	Average Value	Standard Deviation
Anthurium	77	40	-40	15
Avocado	111	66	-47	18
Breadfruit	130	131	-43	24
Cabbage	413	*	-81	*
Carrot	223	*	-69	*
Cashew	21	*	-18	*
Cucumber	384	*	-79	*
Dasheen	97	38	-47	13
Ginger Lily	39	*	-28	*
Golden Apple	154	109	-52	22
Hot Pepper	95	15	-48	4
Mango	28	23	-19	15
Onion	212	18	-68	2
Passion Fruit	484	108	-82	4
Pawpaw	19	9	-16	6
Pineapple	316	316	-75	4
Pumpkin	260	15	-72	1
Soursop	154	98	-5	57
Sweet Potato	206	206	-65	8
Tannia	95	77	-38	17
Tomato	664	*	-87	*
Water Melon	429	*	-81	*
White Potato	146	*	-59	*
Yam	175	*	-64	*
GRAND MEAN	221		-55	

* Note:- only one (1) data point, therefore no standard deviation was reported.

The above findings suggest that the majority of non-traditional commodities investigated in the six OECS countries were being implicitely subsidized and that significant income transfers occured from consumers and taxpayers to producers. As previously stated, OECS Governments have committed themselves to a policy of agricultural diversification. To this end, various policies aimed at removing institutional constraints and providing support for the production of non-traditional crops have been instituted.

Other support measures such as the provision of subsidized credit, water, planting material (in some countries), as well as subsidies for land preparation, the provision of technical training and technology validation and transfer, were also instituted. Attempts were also made to address institutional constraints to production, such as the uncertainty of tenure and the inadequacy of marketing infra-structure. Measures to protect domestic producers from foreign competition through the imposition of licensing requirements and other forms of non-tariff barriers were also introduced. Consequently, the results of this study, which indicate that OECS producers have been the main beneficiaries of government policies, appear plausible.

Of the studies reviewed, only the one conducted by the Planning Institute of Jamaica (PIOJ) sought to measure the impact of agricultural policies in terms of PSEs and CSEs. While the results of the PIOJ study were mixed, for crops intended primarily for the domestic market, (corn, rice and yam), the PSEs were all positive ranging in value from 6% to 70%. For crops grown primarily for export, negative PSEs were derived. This result is not totally unrelated to the over-valuation of the Jamaica dollar. The CSE, for corn and yam were also positive but were somewhat smaller in magnitude (approximately 20%). The CSE, for sugar and rice were, however, negative, both averaging approximately 60%.

In Jamaica, government support for agriculture has been systematically reduced as part of that country's structural adjustment programme, however the agricultural sector continues to contribute significantly to the overall economy. The findings reported for the OECS countries, the economies of which have only recently begun to undergo structural transformations therefore appear to be consistent with the results of the PIOJ Study. This is so particularly in light of the declining, though still significant level of government support to OECS agriculture.

5.2 The Structure of Protection and Support

In terms of the exchange rate, the three studies previously reviewed assumed that the currency of individual CARICOM countries was over-valued.[16] This over-valuation was argued to be detrimental to the region's agriculture since it resulted in negative protection to the sector and in general provided disincentives to exports.[17] The impact of exchange rate on the results of the present study is, however, much less clear cut as there continue to be two schools of thought on whether the EC dollar, the common currency of the OECS member states, is itself over-valued. One view is that the currency is overvalued since it is pegged to the US dollar at a rate of exchange that has been in force since the 1970s and since several of the OECS countries have been experiencing deficits on their current account for several years.[18] There is, however, another school of thought which takes the position that the absence of premium parallel currency markets in these countries strongly suggests that the prevailing exchange rate is not mis-aligned.[19]

Given this scenario and in the absence of empirical evidence, it is not possible to conclude definitively one way or another and this has resulted in the omission of the exchange rate variable as a determinant of protection for OECS agriculture in this study. However, should the OECS countries continue to focus effort on non-traditional exports, the exchange rate regime will eventually need to be re-examined with a view to adjusting it, should it be discovered that it is mis-aligned. This re-examination process should, however, be undertaken as part of a comprehensive policy reform programme aimed at achieving international competitiveness and increased productivity for the OECS economies in general.

With respect to the other policy measures, no evidence was found to suggest that the impact of input subsidies or the provision of subsidized credit has been significant. Both the

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[16] Beyond the computation of real effective exchange rates, which is a fairy rough indicator of whether a currency is over- or under-valued, few empirical studies have been undertaken which have examined the parity of the EC dollar.

[17] It may be worth re-iterating that changing the parity of the EC dollar will require unanimous consent by all OECS member countries operating within the currency area. This severely limits the practicality of advocating currency re-alignment.

[18] This argument is somewhat flawed since over-valuation cannot be correctly measured via deficits on the current account, which also captures borrowing for development purposes.

[19] The parallel rate for the EC dollar is less than the official rate, implying that weak excess demand for the currency exists.

study by Ranis and the study by the PIOJ corroborate this finding. This study also suggests that tariffs as well as other forms of import control were the main policy instruments used to protect the agricultural sector.

5.3. Trade Creation, Trade Diversion and Regional Integration

According to Viner (1950), a customs union (CU) could either be trade creating or trade diverting.[20] A CU is 'trade creating' if it is welfare enhancing whereas a CU is 'trade diverting' if it results in a decrease in economic welfare among other members of the union.

Based on empirical testings of Viner's original theory and its subsequent refinements, certain "stylized facts" have become well accepted in economic literature. According to these "stylized facts", trade creation is more likely to result if one or more of the following conditions are satisfied:

- the tariffs of countries outside the union are high prior to integration;
- the tariffs of the integration partners are high prior to integration;
- the size of the union and number of member countries is large;
- the level of trade with outside countries is low prior to the formation of the union;
- a low common external tariff (CET) is adopted;
- members are geographically close and transportation costs between them are low; and,
- the member countries are complementary in their production structure and the cost of production is close to (or below) world costs, and where the protected sector produces similar products, there is scope for increased competition within the union.

Based on the results of this study and those of the earlier studies that were reviewed, few of the "stylized" conditions seem to hold for member states of the OECS sub-regional grouping. For instance, in the case of agriculture in the OECS, the production structure is clearly not complementary, as in general, the same crops are grown in most of the countries. In addition, the level of tariffs is already fairly low, restrictive trade practices on intra-regional trade are prevalent, and the proposed CET of 45% for competing final agricultural products from third countries is relatively high.

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[20] Viner, J. The Customs Union Issue., London: Steven and Sons, 1950.

These findings would therefore seem to suggest that the possibilities for trade creation in OECS agriculture is rather limited. Based solely on Viner's original theory, such a conclusion may however, be inappropriate since the analysis is static, assuming as it does, a continuation of the existing structure of production and trade. Evidently, if one or more of the "stylized" conditions is satisfied, then dynamic, trade creating benefits could accrue from intensified integration. For instance, if measures are adopted among OECS member countries to rationalize production, through for instance the elimination of non-tariff barriers and discriminating trade practices, then potential benefits could be derived.

In addition, should the existing incentive regime be rationalized to promote the development of crop(s) for which OECS countries may have a competitive advantage, or if marketing infrastructure was strengthened to improve marketing efficiency, then benefits could accrue from deepening integration among OECS member states.

The trade creating aspects of integration have never been significant, even for large countries. Indeed for small countries such as those which comprise the OECS the concept of trade creation/diversion may be quite irrelevant, since even with a movement towards free trade in agriculture the effect on deepening trade creation is not likely to be substantial.

Consequently, for OECS member countries the emphasis on integration should be on integrating production structures to enhance their competitiveness and their ability to break into international markets. In this regard, joint activities to provide the critical mass necessary to attain international competitiveness may be the only viable policy option.

SECTION VI: SUMMARY, GENERAL DISCUSSION AND CONCLUSIONS

6.1. Summary

This study has examined the policies pursued in the agricultural sectors of six countries belonging to the OECS regional sub-grouping (namely: Antigua and Barbuda, Dominica, Grenada, St. Kitts-Nevis, St. Lucia, and St. Vincent and the Grenadines). The impact of these policies on producers and consumers was analyzed for several non-traditional commodities which constitute the focus of current initiatives aimed at diversifying the agricultural sectors of these countries.

In all six OECS member countries, the agriculture sector benefitted from active support and the policy measures adopted in support of the sector were found to be many and varied. These included the imposition of tariffs, licensing and other forms of import controls on competing products, even from intra-CARICOM sources; the provision of credit at below market rates of interest; the development of marketing infrastructure including feeder roads, and cold storage depots at airports and seaports; the conduct of research and the transfer of new and improved technology through the efforts of the extension services of the respective Ministries of Agriculture; and the provision of subsidized planting material. It should be noted, however, that direct price supports was not practiced for any of the commodities investigated and that exchange rate adjustment was not used as a policy instrument.

In assessing the impact of policies on producers and consumers, use was made of a measurement methodology that focussed on the concepts of nominal and effective protection and the producer and consumer subsidy equivalents. This methodology is considered to be particularly appropriate for small countries such as the member states of the OECS where the level of output is considered too small to influence world prices. Two limitations of the approach are its partial equilibrium nature and the fact that it implicitly assumes zero-substitutability among factors in the production process. If substitution actually occurs among the factors of production, the EPC estimates may be either under- or over-stated, depending on the nature of this substitution. The fact that the NPC and EPC estimates were highly correlated suggests that for the OECS countries traded inputs comprise a small component of the total value of output. As such, should the assumption of zero substitutability prove untenable, the attendant biases in the EPC estimates will minimal. The limitations of the partial equilibrium framework are here compensated for by drawing on other information from both within and outside the agricultural sector, thus enriching the information content of the analysis.

Nominal and effective protection coefficients (i.e. NPCs and EPCs) and subsidy equivalent coefficients (i.e. PSEs and CSEs) were calculated for each crop. On the whole, the crops studied were found to enjoy fairly high levels of protection. The mean commodity NPC was found to be 289%, while the mean commodity EPC was 224%. Averaged over all six OECS countries, the mean NPC was 264%, and the mean EPC, 180%. The large standard deviations suggested considerable variation around the means. There were several cases in which the NPCs and EPCs were not directly correlated, implying the non-transmission of potential incentives.

Marketing inefficiencies was considered to be the main factor responsible for this non-transmission of incentives. Major deficiencies identified in marketing were: poor post-harvest handling techniques; expensive but poor quality packaging material; inadequate transportation arrangements especially for inter-island trade; non-competitive and highly protected domestic markets; inadequate storage facilities; and, inadequate marketing research support.

The PSE coefficients were found to be positive in virtually all cases whilst the converse was true with respect to the CSE coefficients. These findings clearly indicate that the policies implemented have resulted in producers earning positive economic rent. On the other hand, consumers and taxpayers suffered net revenue losses as a result of the policy measures instituted. Tariffs and other forms of import controls were found to be the main instruments used to insulate the agricultural sector from international competition. The impact of the other support measures such as subsidized credit and subsidies on other inputs was found to be negligible.

6.2. Discussion of Results

Notwithstanding the generally high level of positive protection received by non-traditional agricultural producers in the OECS, of the commodities investigated, the study found that six (four in Grenada and one each in St. Kitts/Nevis and Antigua) were implicitly taxed. While this finding suggests that these commodities were characterized by production inefficiencies, the root cause, as opposed to the proximate cause of this inefficiency was not immediately obvious in a few instances. The fact that five of these commodities were found to be non-competitive in a recently concluded study by Antoine and Taylor (1993), does appear relevant.[21] However, it

[21] Antoine. P.A, and Taylor, T.G Competitiveness of the Non-Traditional Agricultural Sector in the OECS: A Diagnostic Analysis. Joint Study Prepared for the OECS/ADCU and IICA. ISSN-0253-4746, A2/BB-93-003., November (1993).

is not possible to firmly establish causality from non-competitiveness to negative rates of protection, or vice-versa. This is further complicated by the fact that for cashew production in Grenada as well as pumpkin in St. Kitts/Nevis and Antigua, (both commodities with negative ERPs), the increases in yields and/or reduction in overall cost required to make the enterprise competitive was not significant.

The high rates of protection indicated by the NPC and EPC estimates, result in domestic production being favored over exports. This, along with the dominance of the banana industry appears central to the limited success of agricultural diversification initiatives in the OECS. The protection coefficients also suggest that the level of aggregate protection declined when packaging and marketing functions were included in the analysis. The reduction in the NPC and EPC estimates were more pronounced for fruits and other exotics which require light wrapping in addition to packaging in specially designed crates and/or exterior boxes. This reduction results from implicit taxes on paper and other intermediate packaging inputs, including electricity, from which most packaging firms are not totally exempt. This situation encourages a further dis-incentive to export (anti-export bias), particularly to extra-regional markets where the packaging and labelling standards are oft-times mandatory as well as more stringent than regional standards.

The results of the study suggest that on average the NPCs exceeds the EPCs and in a few cases substantially so. While again suggesting substantial levels of protection for non-traditional agriculture in the OECS sub-region, it is the implied resource mis-allocation induced by firms producing for the domestic market as opposed to producing for exports which constitutes the greater long term costs to member countries of the sub-region. The fact that the standard deviation is large relative to the mean of both the NPC and EPC, is indicative of significant mis-allocations among both commodities and countries. The results also suggest that there is a tendency for the present structure of protection to encourage 'basic' production, and to discourage further value adding initiatives involving even basic levels of packaging and labelling.

One of the dilemmas facing OECS member countries, concerns precisely how the level of protection should be dealt with in order to create the policy environment necessary for the development of dynamic export-oriented firms, while at the same time maintaining some level of support to neutralize the dis-incentives emanating from other sector-specific incentives. In this regard, at least three approaches suggest themselves. The first, which may be practical for OECS member states in which the contribution of agriculture to GDP is very small, is to accept that the scope for further expansion of the sector beyond 1994 levels is remote and to reform

only border and other trade discriminating policies, consistent with the *dictates* of the GATT and CARICOM Agreements.

The second approach, practical for countries in which it is envisioned that the non-traditional agricultural sector has some contribution to make to the development process, is to embark on an overall process of macro-economic, sectoral and trade policy reform. This holds promise for achieving the requisite elimination of anti-export and anti-agricultural biases inherent in present policies and programmes. This reform process could also ensure the design and implementation of prudent macro-economic and sector-specific policies targeted to the attainment of efficient export oriented firms.

The third option, which is somewhat of a happy medium between the first two involves "quasi-policy reform". Quasi-policy reform involves the following aspects:

- the phasing out of non-tariff barriers;
- immediate, unrestricted entry for OECS produced agricultural commodities on a reciprocal basis;
- elimination of duties on intermediate inputs used in agricultural exports;
- phasing out of duty exemption on certain inputs;
- reduction in the number and extent of incentives accorded to manufacturing firms;
- unrestricted movement of factors, labour and capital between OECS member states;
- reduction in the number of policies and programmes which offer protection to producers; and,
- conversion of the tariff and other surcharge revenues collected on agricultural imports into a special export development fund.

Another dilemma involves the potential impact that this policy reform process could have on labour now trapped in non-traditional agricultural production. Two factors augur well for policy reform in this regard, the first is that the non-traditional sector is presently comprised of a large number of persons who earn a livelihood from off-farm employment, notwithstanding these persons being counted as farmers in agricultural census/surveys.

If the output from such farms is sold at all, it is only to supplement off-farm income. This in no way discounts the contribution of such income to this group, since in some instances, farm income actually exceeds income from off-farm sources (particularly in countries like

Grenada, St. Vincent and St. Kitts/Nevis). It is not clear to the authors that this group will be too adversely affected by the policy reform measures being proposed.

The second factor, is that it is quite possible that the taxation which the present policy regime implies for consumers and taxpayers far exceeds the wages and salaries and net benefits which accrue to producers. While this at its core remains an empirical issue, if the effective protection exceeds the combined sum of wages and salaries paid to produce the product this could suggest that the employment is being generated at significant social costs. This issue also deserves further investigation.

The high rates of protection offered to non-traditional producers could have potentially provided an incentive for the expansion of intra-OECS exports, in addition to providing a stimulus for domestic production. However, the NTB's along with the competitive structure of production for certain commodities, effectively prohibited exports of some commodities and has significantly reduced trade flows for others. The net effect of this, is that the major impact of the protection offered to OECS agriculture has been to increase the level of import- substitution among OECS member states, a policy which continues to ensure the survival of inefficient farm-firms.

The finding that substantial variations exist in both the NPC and EPC estimates between both commodities and countries, is particularly important since it runs somewhat contrary to the harmonized policy environment being promoted by both the OECS and CARICOM. More disturbing perhaps, are those results of the study which imply that although tariffs have been eliminated on intra-regional trade, significant non-tariff measures continue to exist which drive a wedge between domestic producer prices and retail prices, thereby insulating producers from competition, both from regional and extra-regional sources.[22]

Two issues emerge from this, the first is that, while harmonization of tariff schedules along the lines of the Common External Tariff (CET), remains a necessary first step in achieving harmonized policies, such measures do not constitute a sufficient condition for the attainment of this latter objective. Secondly, the results of this study suggest that even with harmonized tariffs, the objective of macro-economic policy harmonization across OECS member states which

[22] In principle the Common Market Agreement prohibits the imposition of import duties as well as quantitative restriction on commodities traded within CARICOM.

remains the ultimate goal for instituting these policy measures, will continue to be elusive, as a result of the differential impact of other accompanying policy measures at the domestic level.

In many instances, the results suggested that the protection received by some OECS member countries, was at the expense of other CARICOM countries, in violation of the spirit of the CARICOM Agreement. Given the magnitudes of the EPCs, it appears that tariff harmonization will only be of limited success in broadening the export base of OECS member countries and will have even less of an impact on reducing production inefficiencies across non-traditional commodity producers. This suggests that several other actions may be required in addition to tariff harmonization which remains critical for the deepening of the regional integration process.

It is prudent to reiterate that both the NPC and EPC measures denote potential incentives to producers, not actual incentives. Whether or not a potential incentive translates into an actual positive incentive depends on the choices open to producers. These choices concern what other commodities can be produced (i.e. what are the alternatives available for resource investment), as well as other considerations such as, technology. In this regard, relative net returns among competing economic activities (both agricultural and non-agricultural), act as an indicator of relative actual incentives. Returns and firm profitability are however factors which are impacted in both a direct and indirect manner by the policy environment, in particular by macro-economic policies and fiscal measures.

The possibility exists that the protection offered to the manufacturing and tourism sectors may have had an adverse impact on the agricultural sector. In addition the fiscal and other incentive measures offered to these sectors, may have biased investments away from initiatives yielding long-term pay-offs. This may well form part of the explanation for the slow development of non-traditional agriculture in the six OECS member states, in spite of the heavy protection guaranteed by the present regime of agricultural policies.

6.3 General Conclusions

The findings of this study are consistent with a scenario in which producers receive a relatively high degree of protection, but the resultant impact on production continues to be marginal. This conclusion is explained both by macro-economic and sector-specific factors. At the macro-economic level, the increase in the export price of bananas during the latter part of the 1980s, as well as the rapid expansion of the tourism sector are central in explaining this

finding. The relative impact of these factors can however be conveniently distinguished with reference to the Windward and Leeward islands.

According to recent estimates by the East Caribbean Central Bank, in the Windward Islands, with the exception of St. Vincent and the Grenadines and Montserrat, the real effective exchange rate for the other OECS countries has improved relative to the 1984 base year. However, a more appropriate measure for the purposes of this study would have been the real exchange rate for agriculture which could then be compared to the real exchange rate for other sectors of the economy. In the absence of such a measure, the most likely impact of macro-economic policies on the agricultural sector must be "teased" out of a simple theoretical framework. If agricultural output in the Windward Islands is modelled as being composed primarily of exportables, in a general equilibrium framework, the supply of exportables becomes a function of, inter-alia, the supply of non-tradeables produced both in the agricultural sector itself as well as in other sectors of the economy.

In this framework both government expenditure as well as private investment are allowed to impact the demand for and supply of resources used within the agricultural sector. Within this framework the increase in the export price of bananas in the late 1980s, for the banana producing countries of Dominica, St. Vincent, St. Lucia and to a lesser extent Grenada, would have caused a substitution of resources from non-traditional production into banana production. This would have led to a reduction in resource availability in the non-banana producing sub-sector. This substitution would occur regardless of the net effect on the real exchange rate for agriculture.[23] It appears that the increase in the relative price of bananas caused an increase in resource substitution in favour of the production of non-traded goods in other sectors of the economy, thus causing the real exchange rate for agriculture to depreciate in some OECS member countries.

In the Leeward Islands the continued expansion of the tourism sector as well as increased activity in the construction sector, particularly in countries like Antigua and more recently in St. Kitts/Nevis, would have set in motion similar substitution effects as in the Windward Islands, resulting in resource transfers out of agriculture.

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[23] In fact, whether the real exchange rate for agriculture appreciates or depreciates will depend on several other factors including the prices of commodities produced within the agricultural sector relative to other sectors of the economy and the relative composition of the output mix (tradeable or non-tradeable) within the various sectors themselves.

While the factors examined above, in both the Windward and Leeward Islands, may be central in explaining the results of this study, other factors ought not be ignored. So far the influence of factors such as risk, which is considerably more significant for non-banana and non-agricultural enterprises than for banana or agricultural enterprises, have not been examined. These other factors are also important in providing an explanation of the possible economic phenomena which underscore the EPC and NPC estimates. These estimates are also affected by the continued lack of marketing support, including the marketing information systems and transportation alluded to previously.

Notwithstanding the considerable opportunities which may exist to increase domestic value added by engaging in agricultural production as opposed to either manufacturing or tourism, the results of the study suggest that in several instances, producers may be engaging either in inefficient production or in the production of commodities in which they are not export competitive or competitive in the domestic market. Neither the framework used nor the nature of the data facilitates a clear identification of the dominant factor in this regard, but the limited technical progress which has characterized farm-firms since the early 1970s appears to be another closely related factor. In fact a comparison of the technical coefficients of this study with an earlier study on costs and returns for rootcrops by Rankine (1972), suggests that very few differences exist in technical coefficients.[24]

Even in instances where production enhancing technologies have been 'validated' by various institutions involved in the technology validation and transferral process in the OECS, producers, for one or more reasons have been tardy to adopt them. One reason for this poor rate of adoption has been the limited consideration accorded to the economic feasibility of these technologies. Indeed, it appears that quite often technologies are being 'validated' which, while being technically feasible given the limited resource base of producers, may not be economically feasible.

The study suggests that another reason for the poor rate of adoption may be the inappropriate nature of the incentive measures instituted. This may be due to the ad-hoc manner in which incentive measures are formulated. Such measures often lack any serious scientific basis, or ex-post analysis of their impact. Consequently, in many of the OECS countries studied, a number of policy measures are pursued which no longer serve the purposes for which they

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[24]See Rankine B. L., "Comparative Economics of Root Crop Production in Selected Countries of the Commonwealth Caribbean". Part 1. Costs and Returns for Specified Root Crops., Occasional Series No. 8., UWI (1972).

were originally intended, either because the economic premise on which they were based is no longer valid, or because they were mis-guided from their inception.

The results suggest that for whatever reason or combination of reasons, the potential positive effects of the policy measures introduced in the area of agricultural production have been limited, while indicating that the structure of protection essentially discriminates against higher value adding activities. It remains quite possible that this arises from associated production and marketing inadequacies such as the lack of a consistent supply of raw materials for processing. Should this be the case then addressing the constraints to production and marketing to which the study previously alluded maybe helpful in remedying this situation. As a corollary to such measures however, there is a need to more aggressively promote agro-processing as well as other higher value adding activities. A continuing weakness of the diversification efforts to date continues to be the heavy bias towards fresh produce for exports. If attention is not accorded to developing the infrastructure necessary to exploit opportunities in fresh produce markets in many OECS countries, then a more aggressive pursuit of agro-processing may offer a viable alternative for successful export marketing.

Beyond the obvious need for policy reform which has now become fairly well accepted, there is also a need to accelerate the process of structural diversification across OECS countries. In this regard, critical roles are perceived for both OECS Governments as well as for the private sector. In addition to the previously discussed need to accelerate factor mobility and to develop the requisite transportation, marketing and information infrastructure across OECS territories, the establishment of an appropriate macro-economic environment within each OECS member country characterized by a stable exchange rate and fairly low real rates of interest, will be critical.

To conclude, as some have, that the EC dollar is mis-aligned without the benefit of further research appears somewhat ill-advised. Indeed, it is not immediately obvious to the authors that the merits of such a re-alignment suggested solely by the economic fundamentals of demand and supply will outweigh the associated uncertainty and speculation which will be spurred by such a move.[25] The results of this study suggest that given the level of production and marketing inefficiencies for some commodities, the benefits of currency re-alignment without an associated improvement in productivity related factors, will be both small and short lived.

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[25] These two factors explain quite adequately movements in the Jamaican dollar.

In terms of a strategy for addressing the limited impact of existing agricultural policies and programmes, the study suggests that the solution lies in the rationalization of existing measures on the basis of careful evaluation. In this regard, the small size of the non-traditional sector in relation to the overall economy and the potentially catastrophic effect of reducing support to an already inefficient sub-sector, presently unable to compete internationally, should be borne in mind. The results of the study suggest that in relative terms, the absolute level of payments to producers remains small, although production inefficiencies or the production of commodities in which the countries themselves may not have a competitive advantage may be causing fairly high domestic costs. Addressing the production and marketing inefficiencies-cum-competitive disadvantages will ensure that the existing policy measures do more than encourage inefficient import substituting farm-firms. The findings of this study indicate that this should be undertaken as part of a broader package of economic policy reform. Such reform should be aimed at eliminating existing distortions and constraints to the attainment of efficient production across broad sectors of OECS economies.

In conclusion, it appears that the overall policy reforms proposed as well as the other sector specific measures suggested above will be critical in engendering the dynamic farm-firms needed to effect the structural diversification of the OECS economies. It is the contention of the authors that this will be most feasibly attained by a sector which is internationally competitive. This concept must therefore be incorporated into the emerging roles for government and private sectors across OECS countries.

APPENDIX 1: THE CROPS STUDIED

TABLE 1: CROPS STUDIED BY COUNTRY

Antigua/Barbuda	Dominica	Grenada	St Kitts/ Nevis	St Vincent and the Grenadines	St. Lucia
Avocado	Avocado	Avocado	Cabbage	Avocado	Avocado
Hot Pepper			Carrot		Hot Pepper
Mango	Mango	Mango	Cotton	Mango	Mango
Pawpaw	Pawpaw	Pawpaw	Onion	Pawpaw	Pawpaw
Pineapple			Tomato	Pineapple	Pineapple
Pumpkin			Pumpkin		
Sweet Potato	Sweet Potato		Sweet Potato		
			White Potato	Eddoes	
	Tannia	Tannia	Yam	Tannia	Tannia
Sweet Pepper	Breadfruit	Breadfruit		Breadfruit	
Cucumber	Dasheen	Dasheen		Dasheen	Dasheen
Mellon		Cashew			
Onion					
	Anthurium	Anthurium		Anthurium	
	Ginger			Ginger	Ginger
		Soursop		Soursop	Soursop
	Passion Fruit	Passion Fruit		Passion Fruit	Passion Fruit
	Golden Apple	Golden Apple		Golden Apple	
	Ginger Lily	Ginger Lily			

APPENDIX 11
RELATIVE NPC AND EPC BY COMMODITY ACROSS COUNTRY

FIGURE 13: ANTHURIUM
Relative NPC and EPC by Country

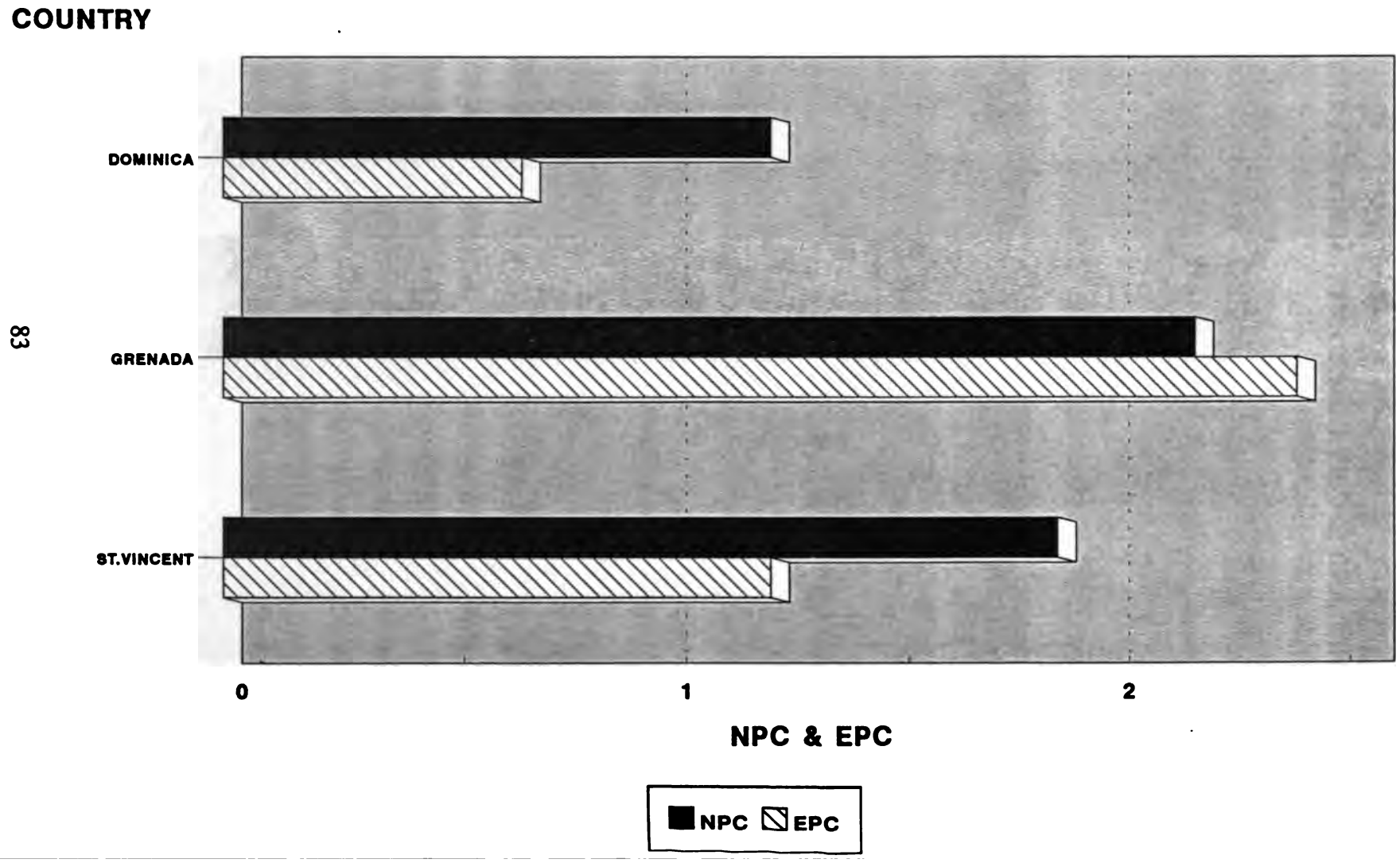
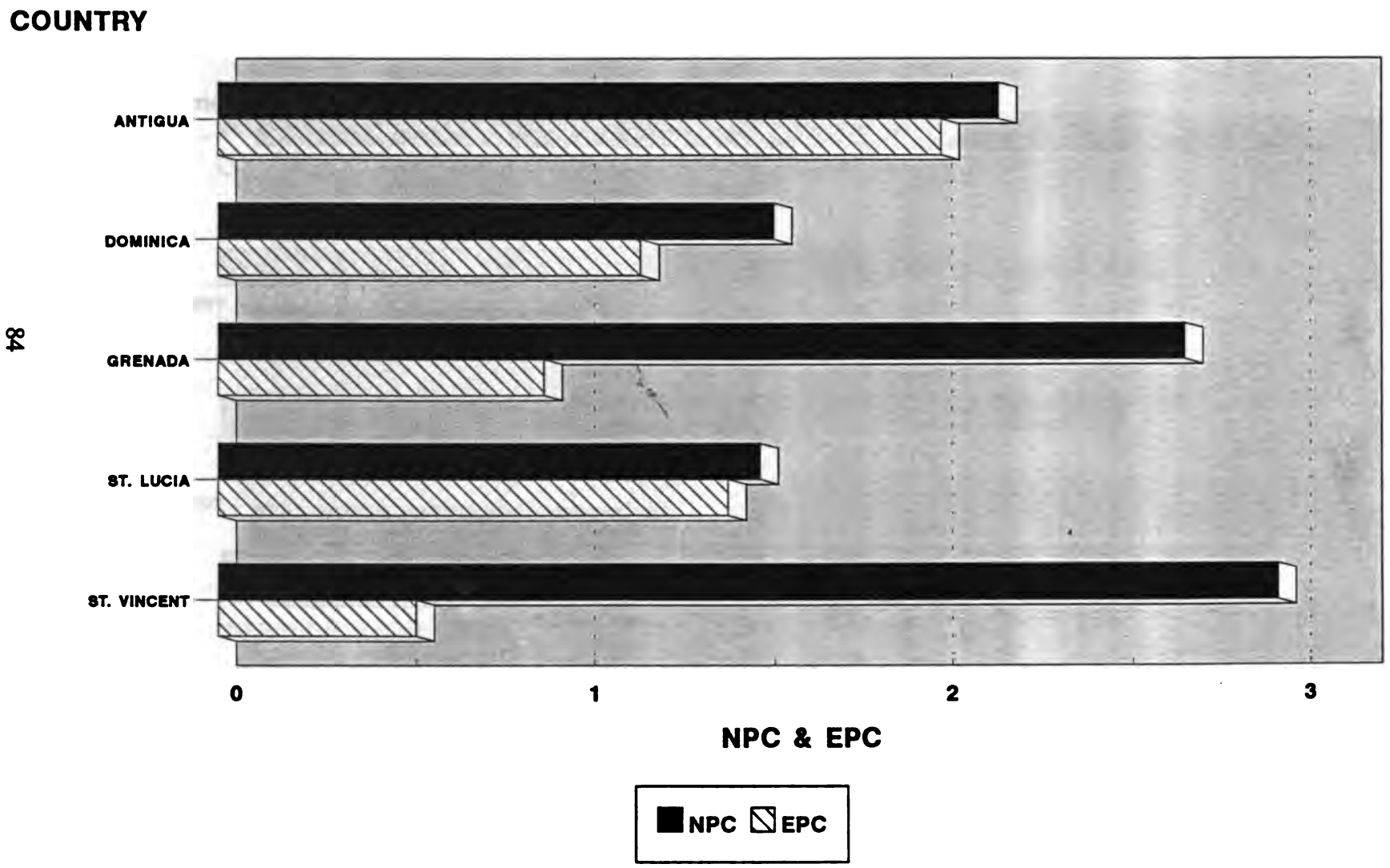


FIGURE 14: AVOCADO
Relative NPC and EPC by Country



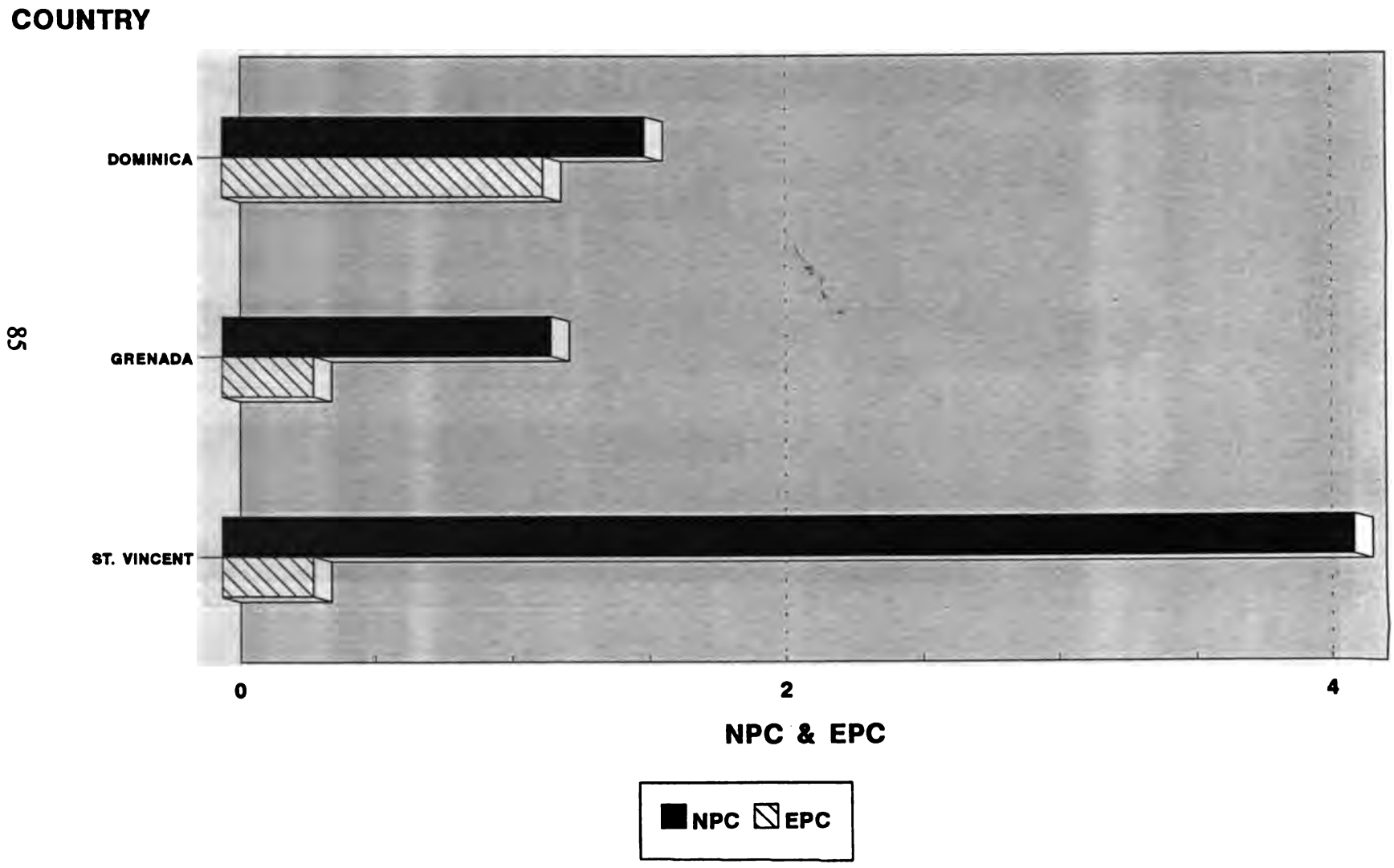
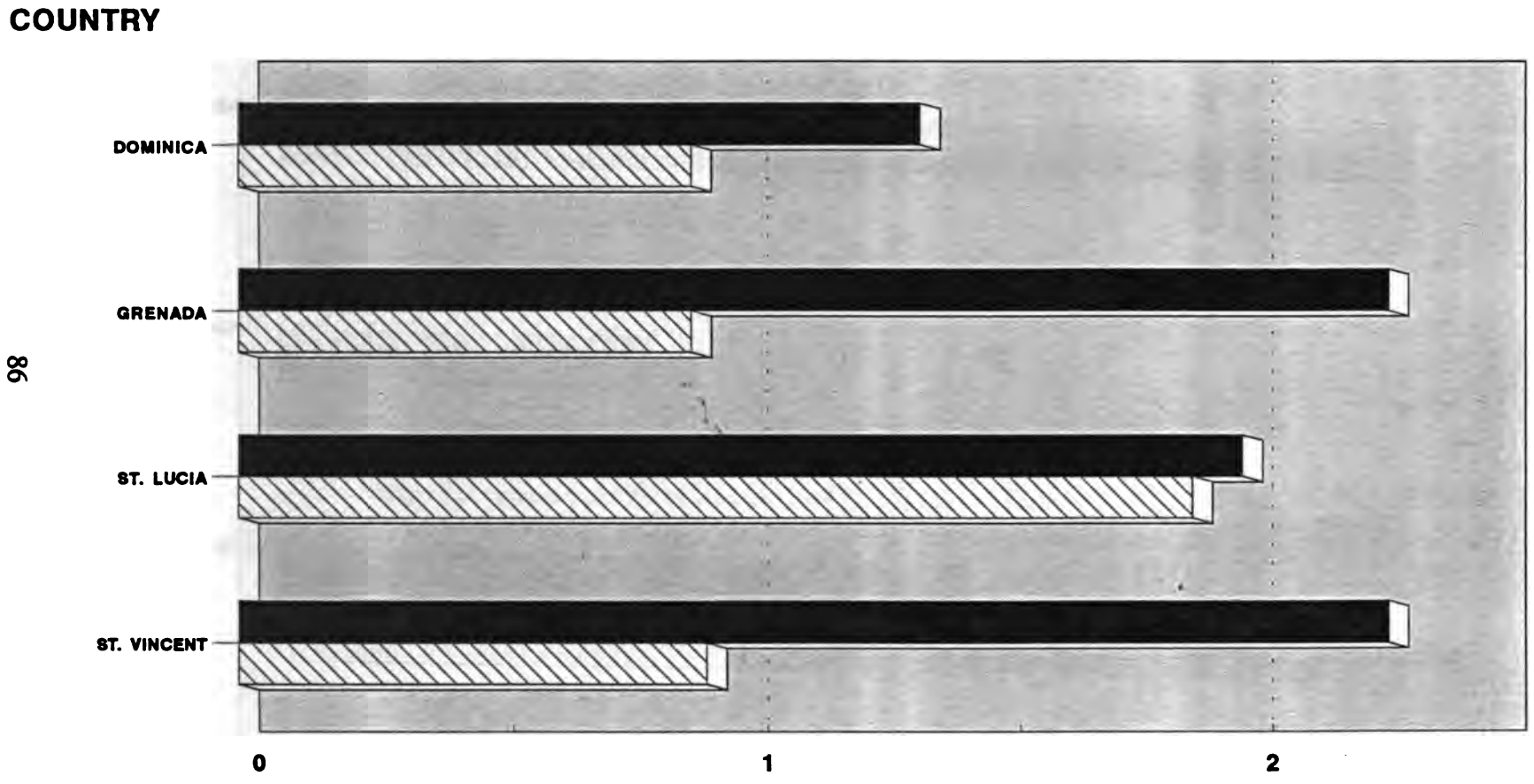

COUNTRY
DOMINICA
GRENADA
ST. VINCENT
0
2
4
NPC & EPC
NPC
EPC

FIGURE 16: DASHEEN
Relative NPC and EPC by Country



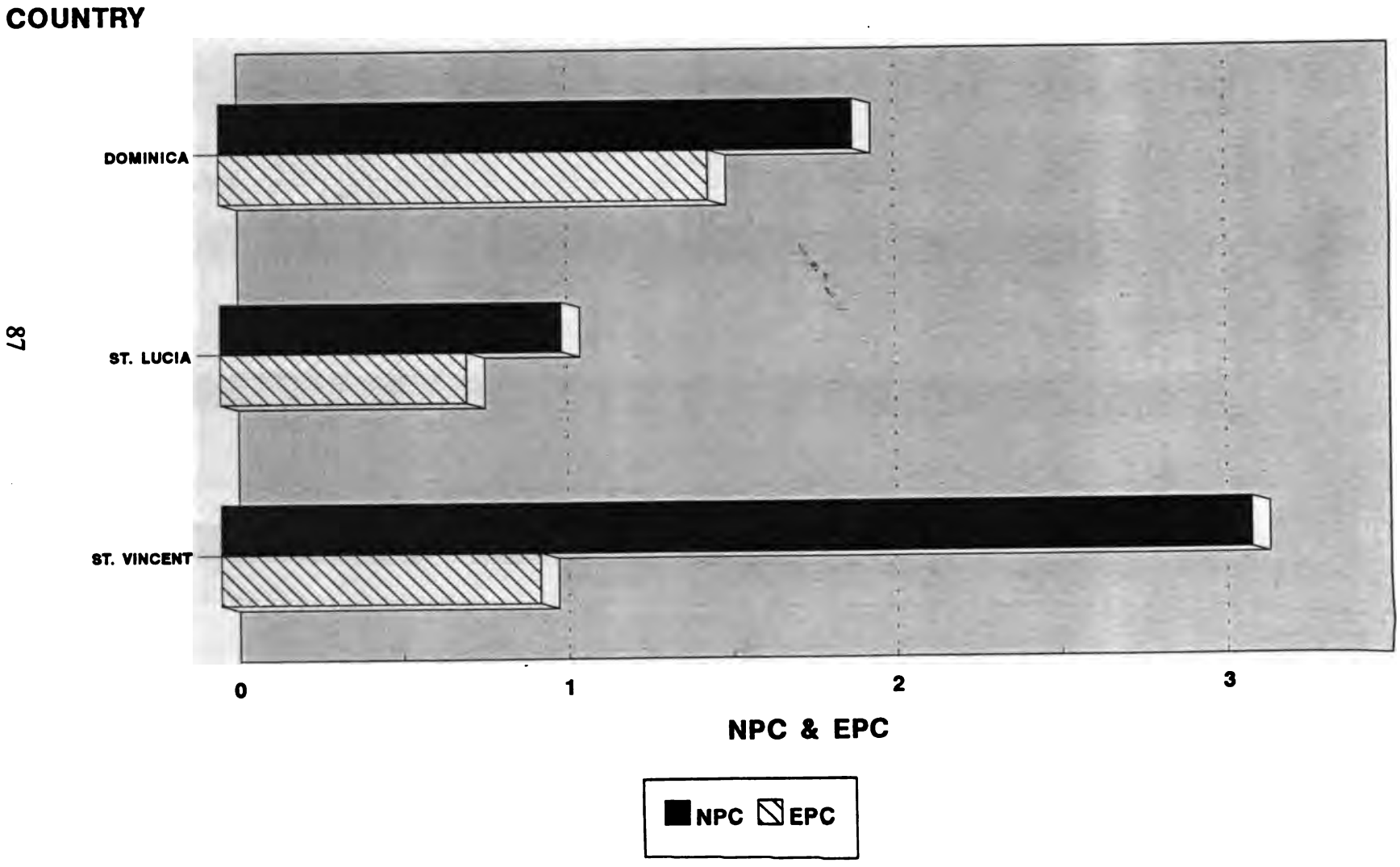
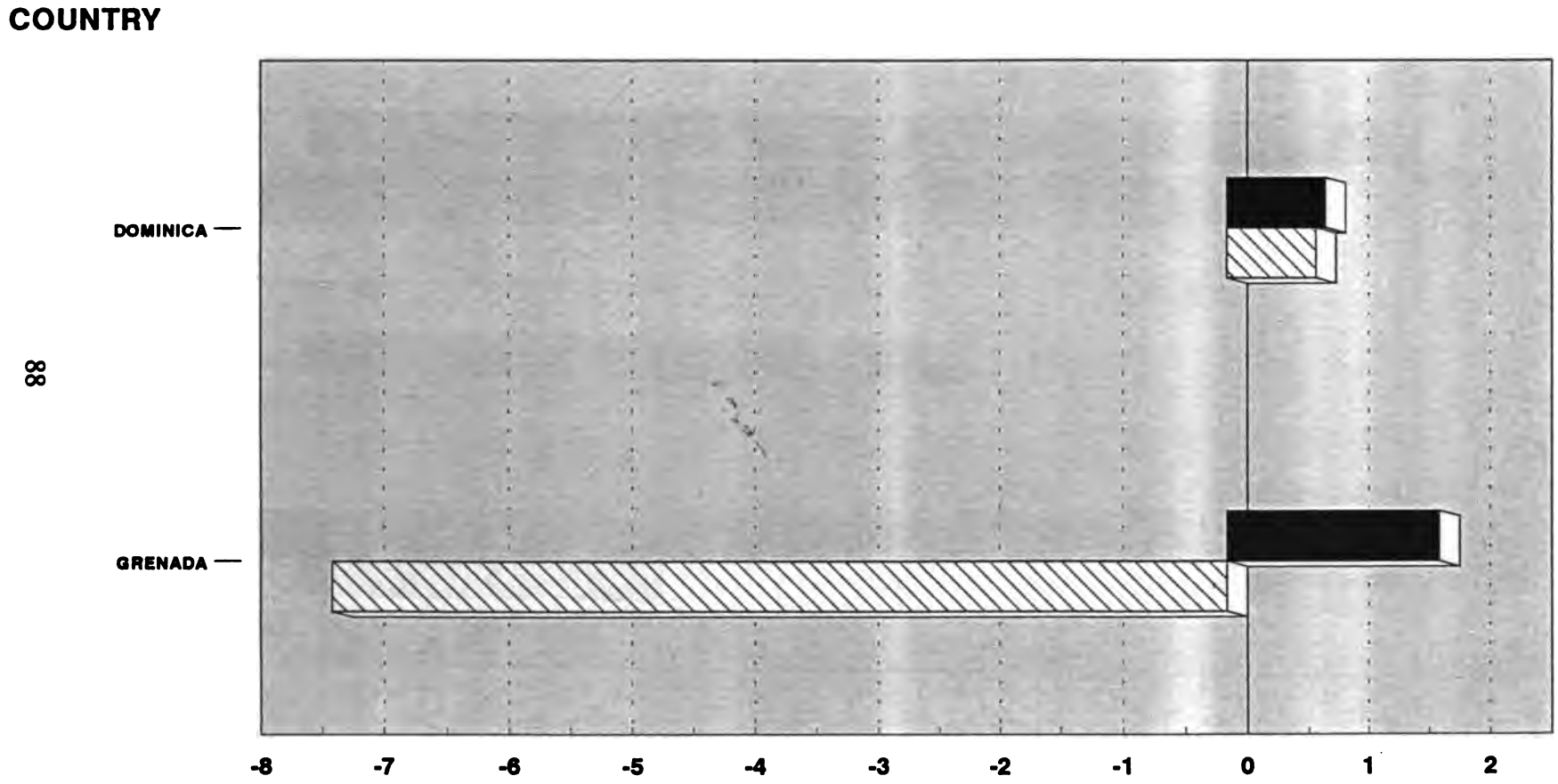

COUNTRY
DOMINICA
ST. LUCIA
ST. VINCENT
0
1
2
3
NPC & EPC
NPC
EPC

FIGURE 18: GINGERLILY
Relative NPC and EPC by Country



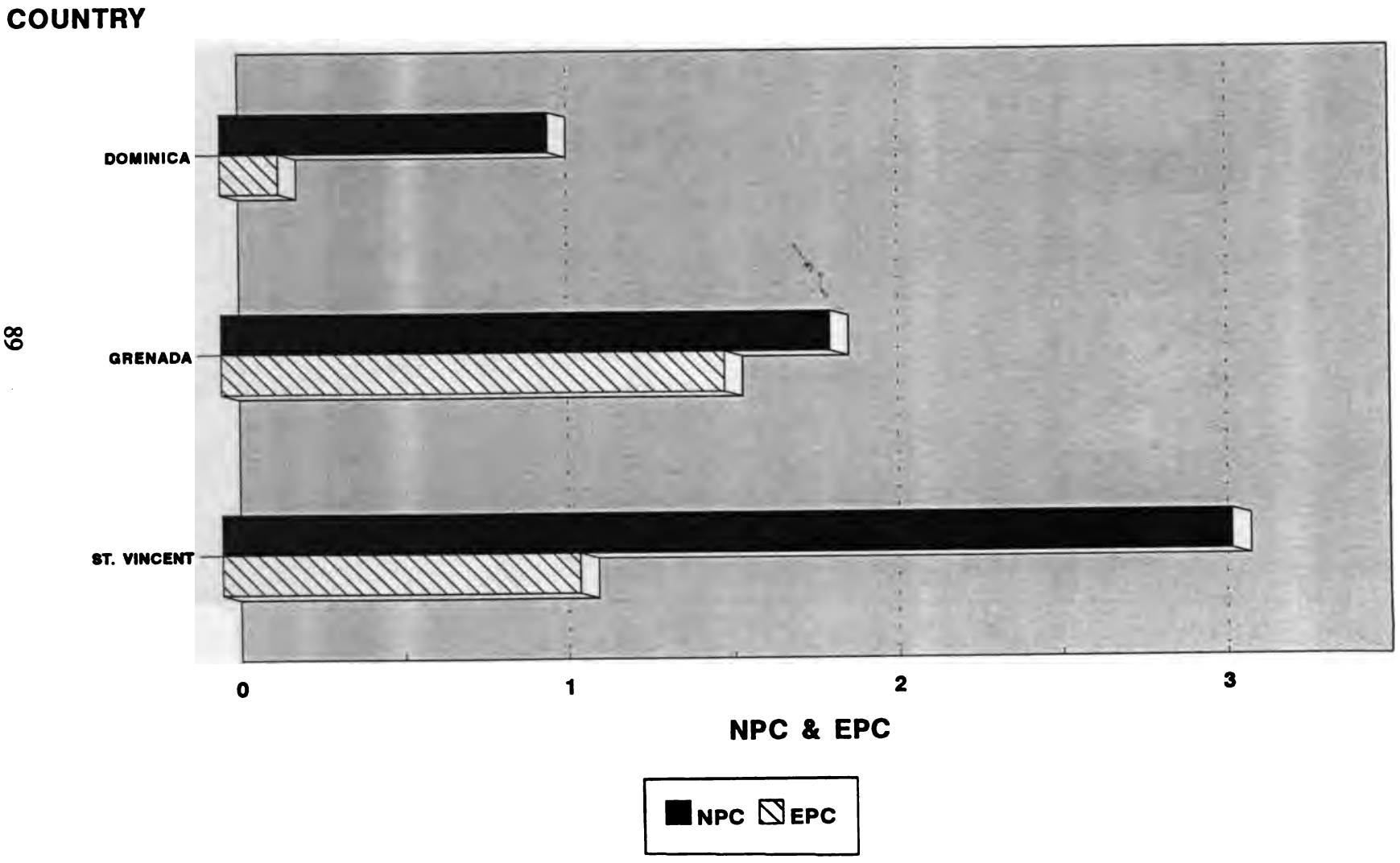
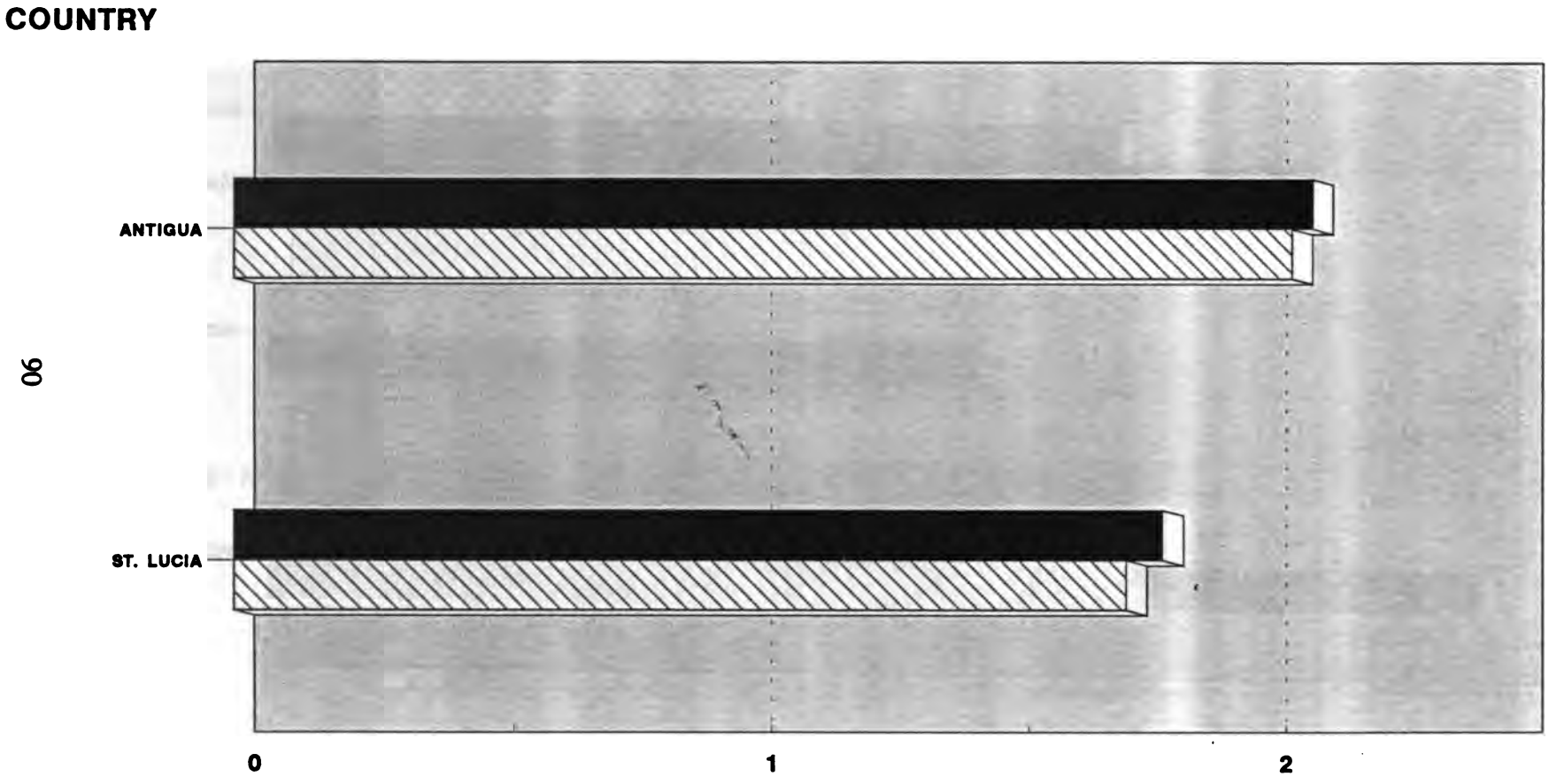

COUNTRY
DOMINICA
GRENADA
ST. VINCENT
0
1
2
3
NPC & EPC
NPC
EPC

FIGURE 20: HOT PEPPER
Relative NPC and EPC by Country



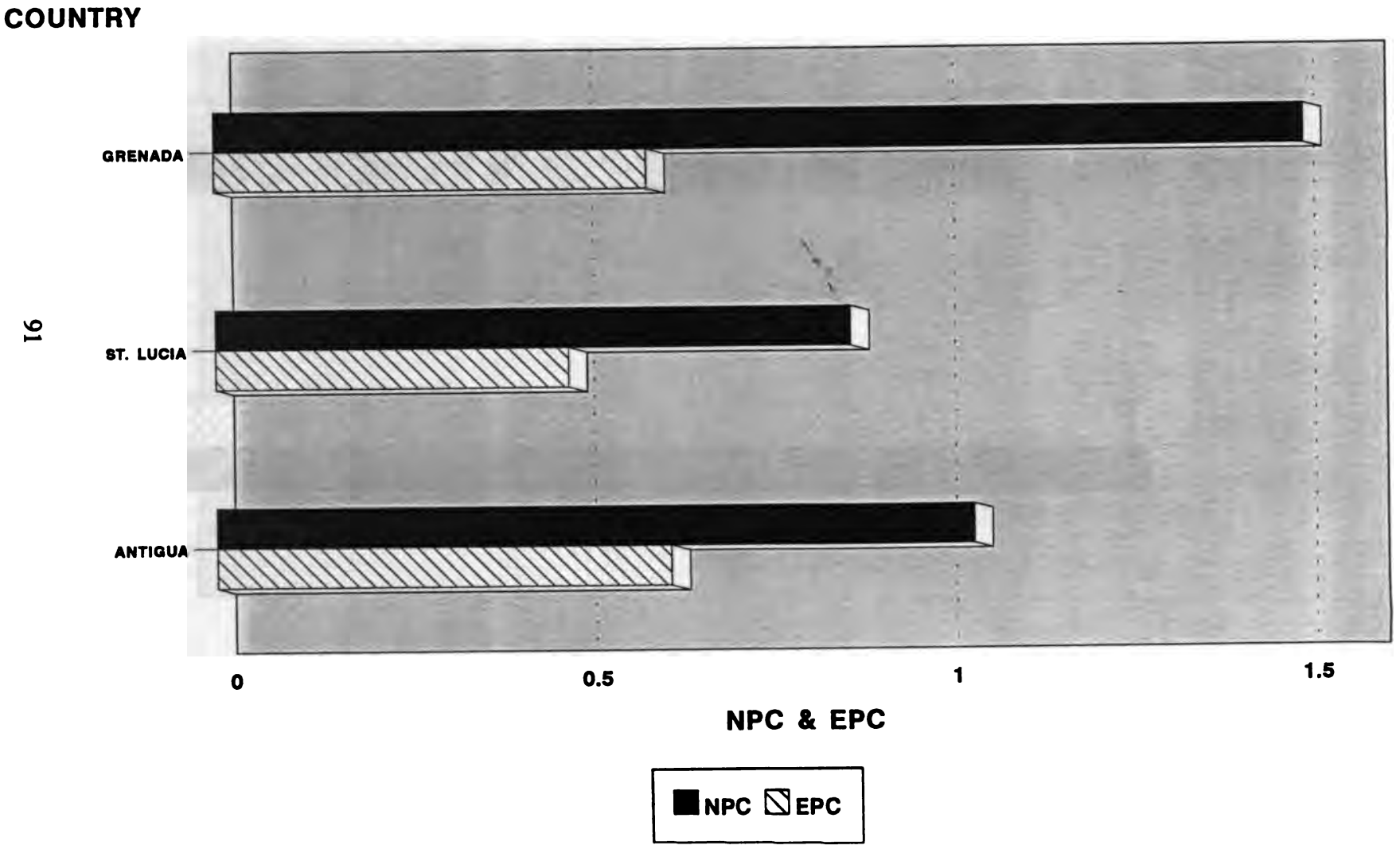

COUNTRY
GRENADA
ST. LUCIA
ANTIGUA
0
0.5
1
1.5
NPC & EPC
NPC
EPC

FIGURE 22 ONION

Relative NPC and EPC by Country

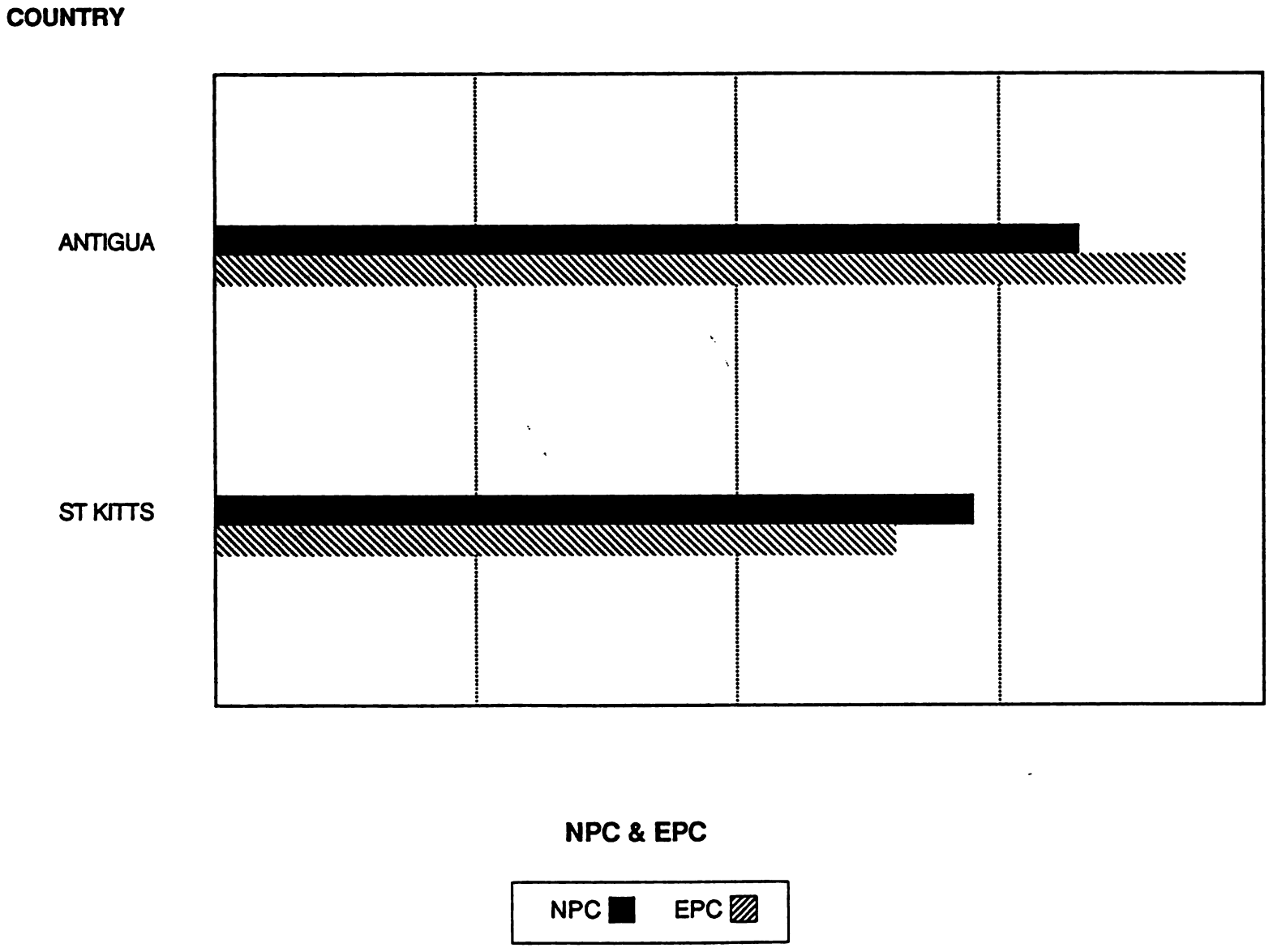


FIGURE 23: PASSIONFRUIT
Relative NPC and EPC by Country

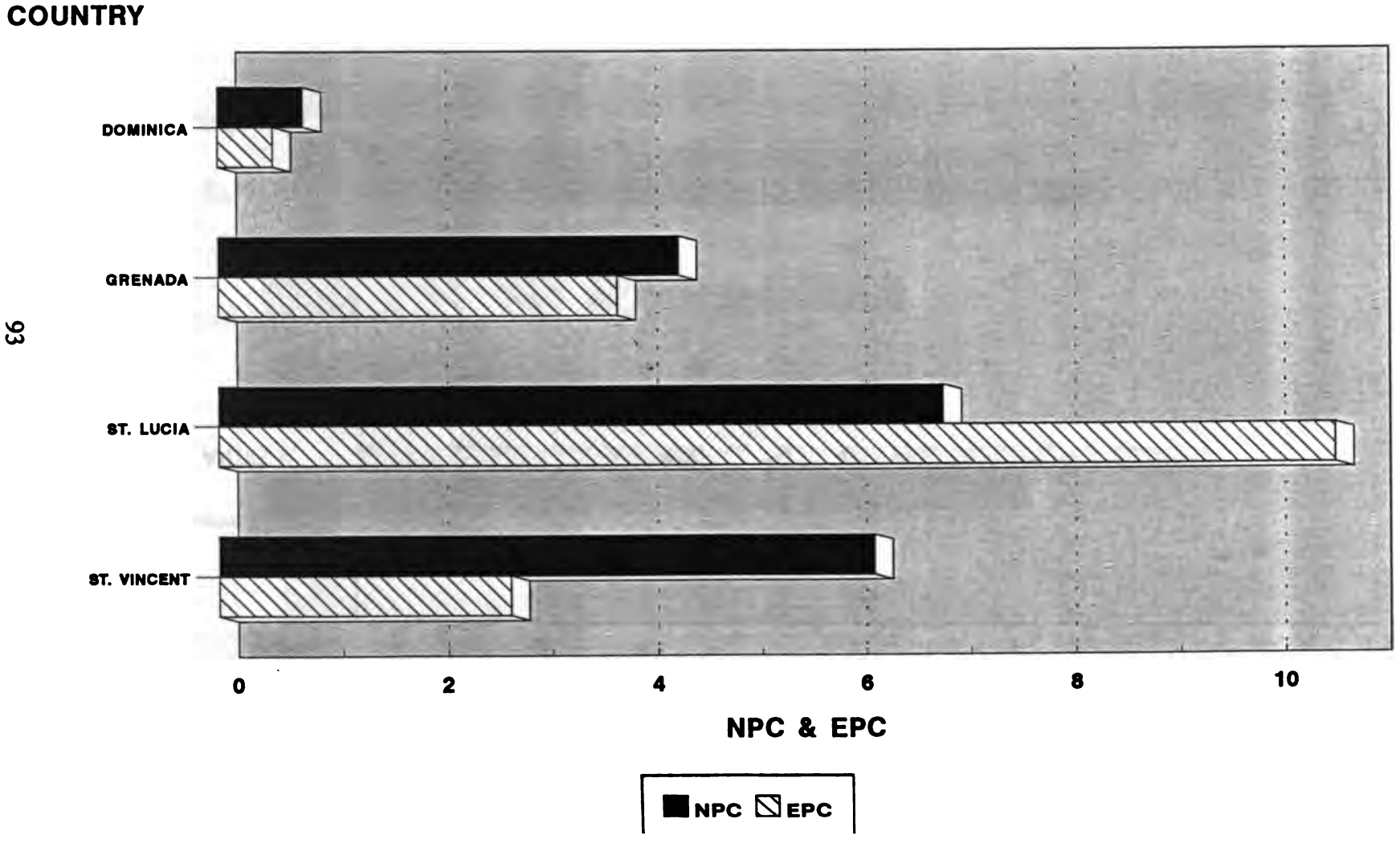
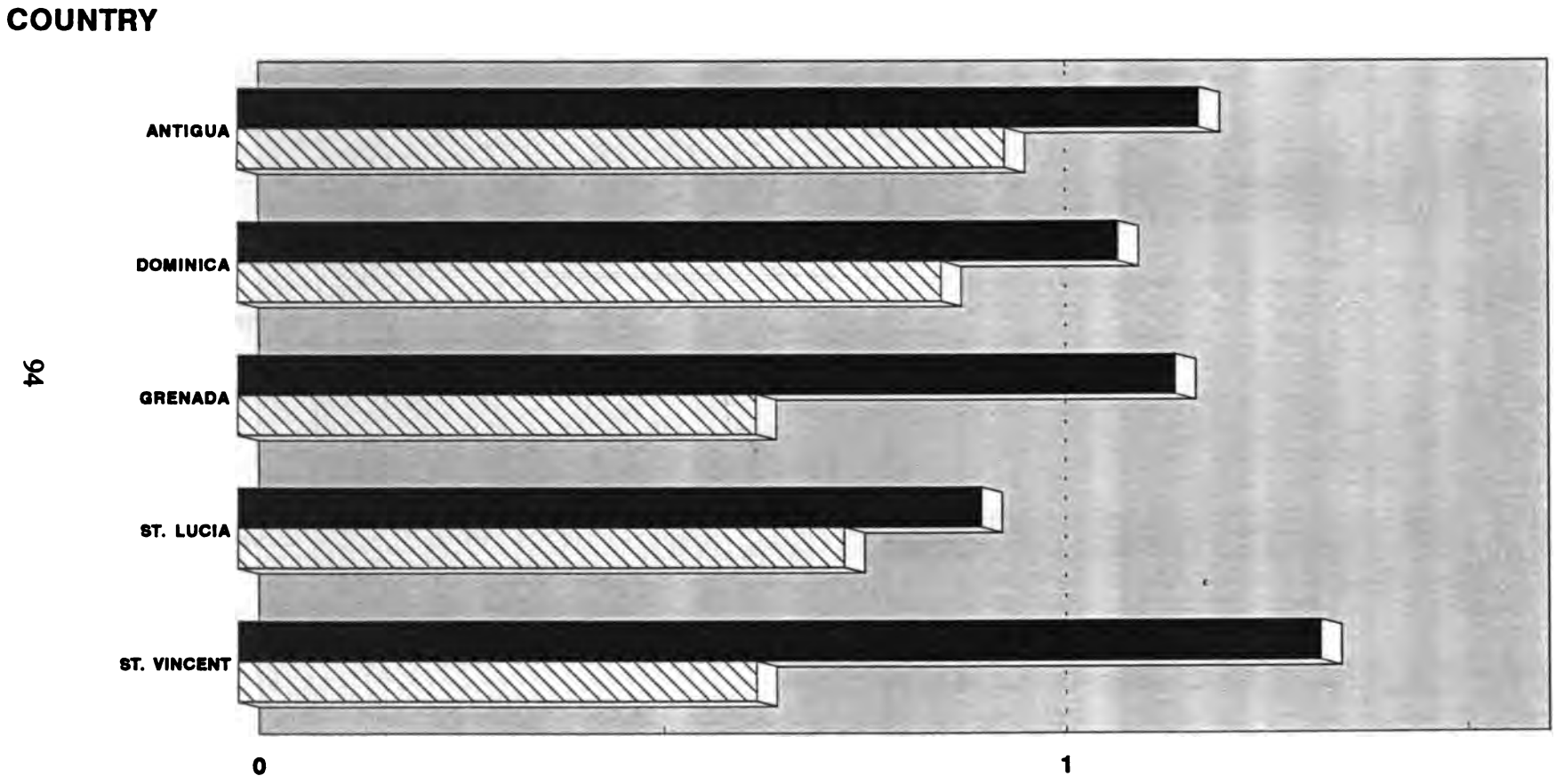


FIGURE 24: PAWPAW
Relative NPC and EPC by Country



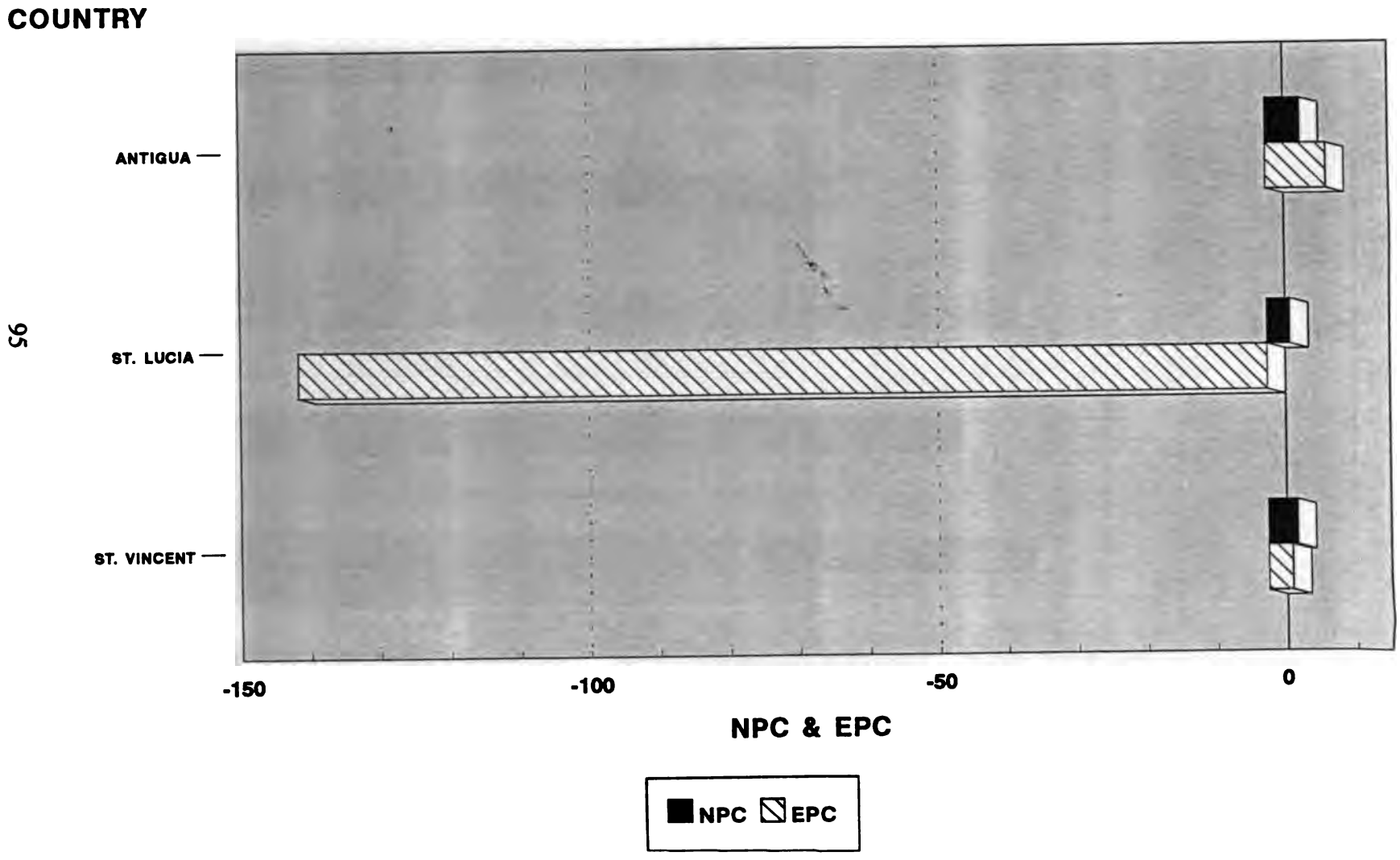
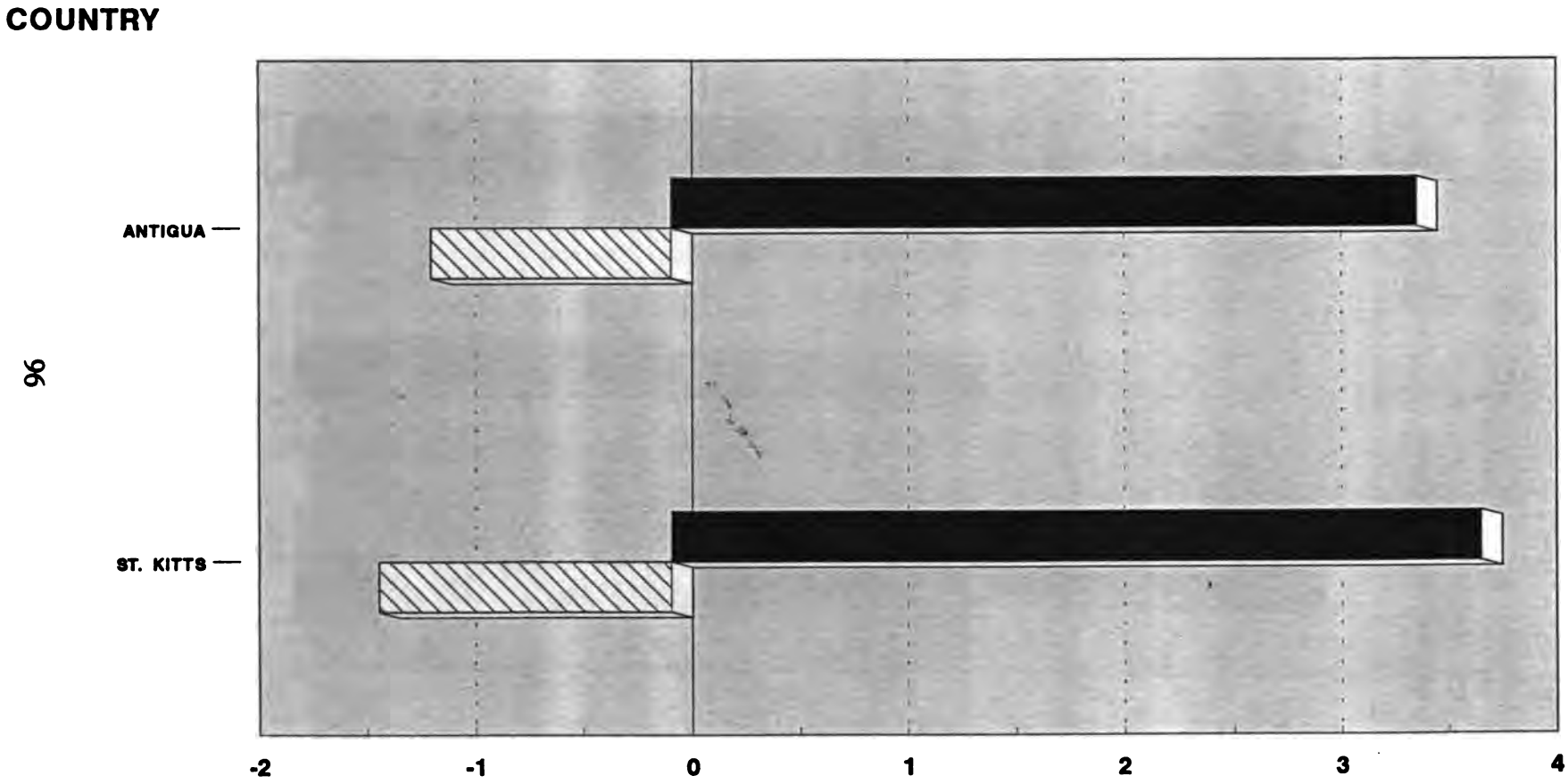

COUNTRY
ANTIGUA
ST. LUCIA
ST. VINCENT
-150
-100
-50
0
NPC & EPC
NPC
EPC

FIGURE 26: PUMPKIN
Relative NPC and EPC by Country



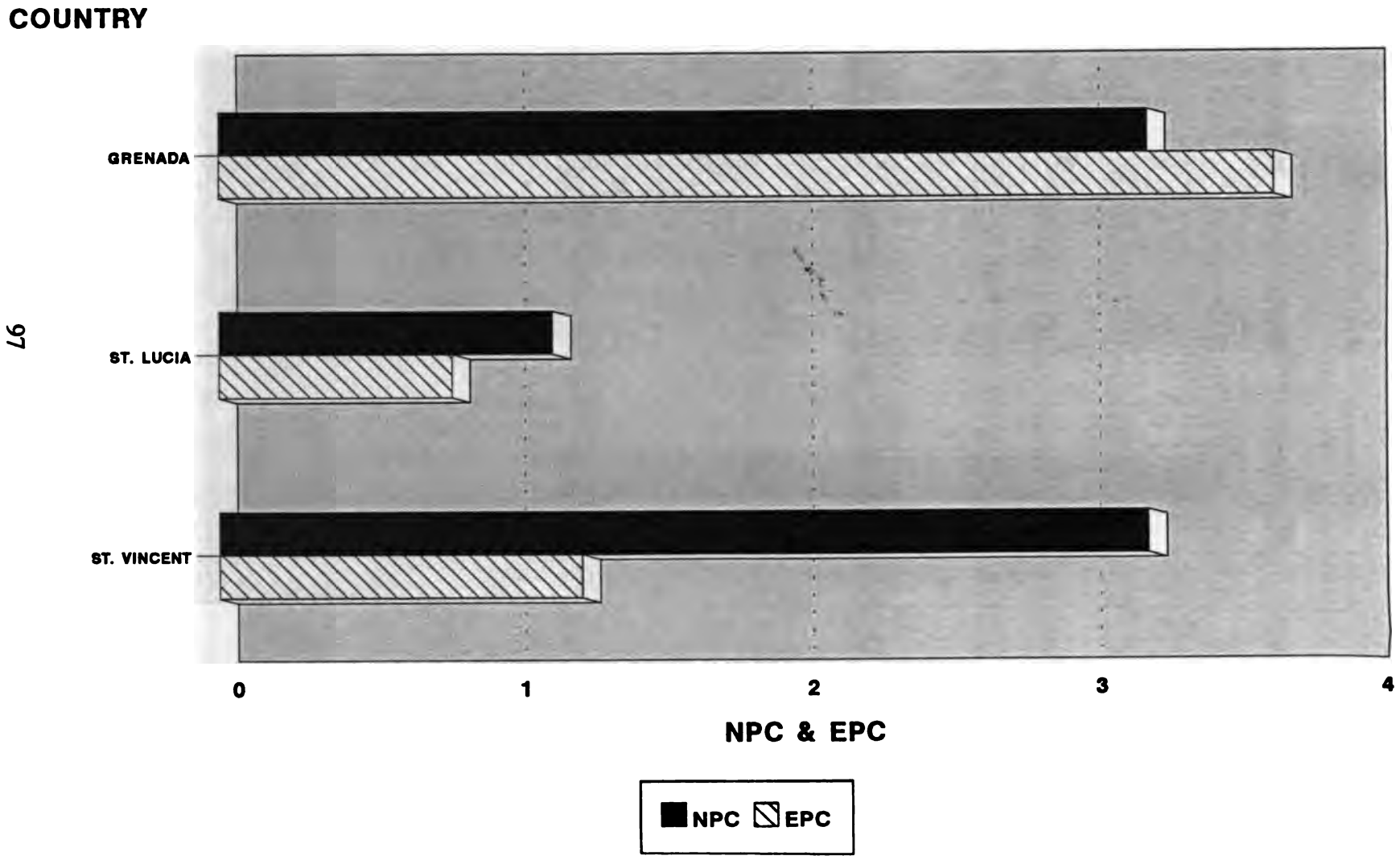
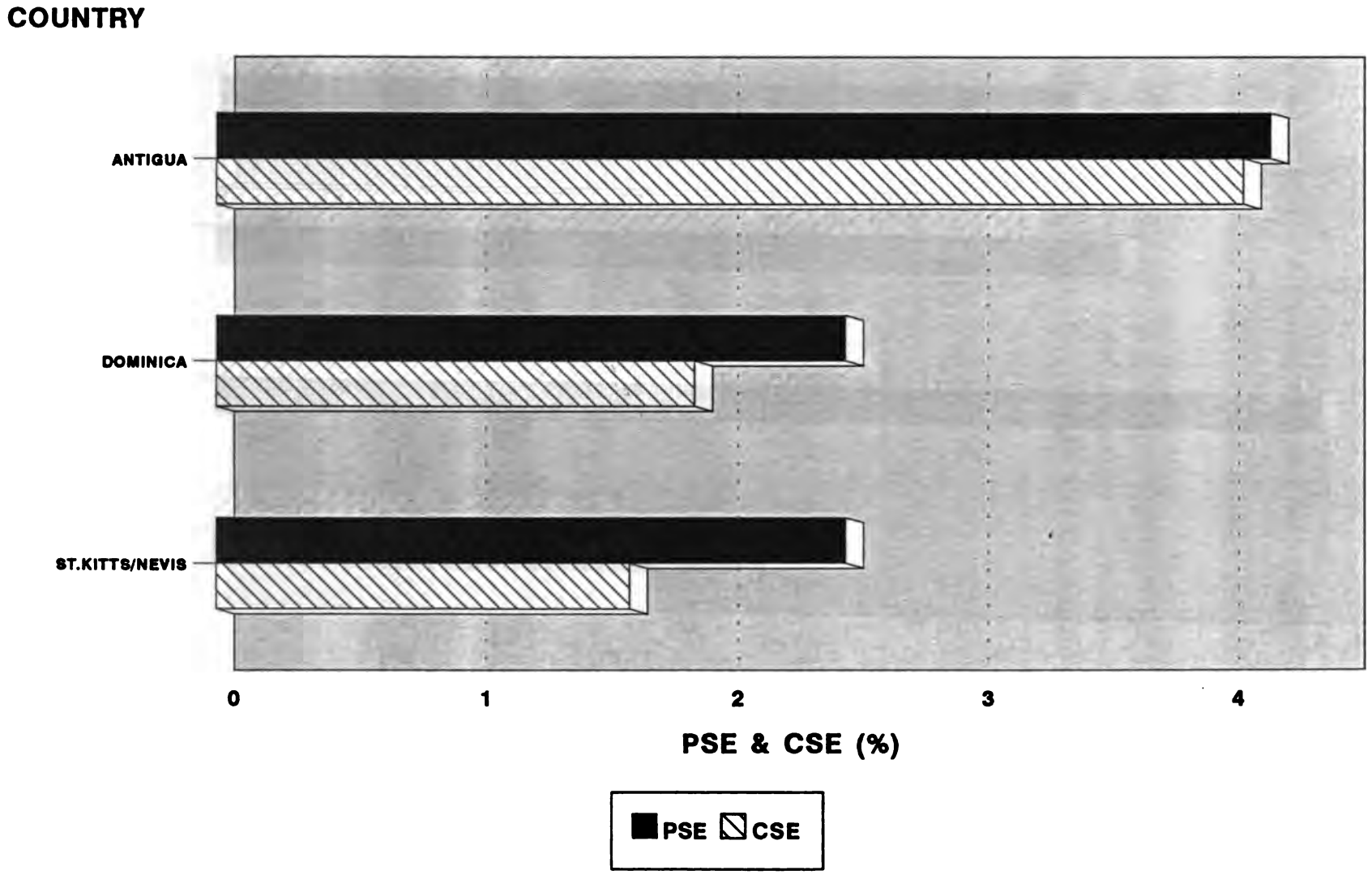
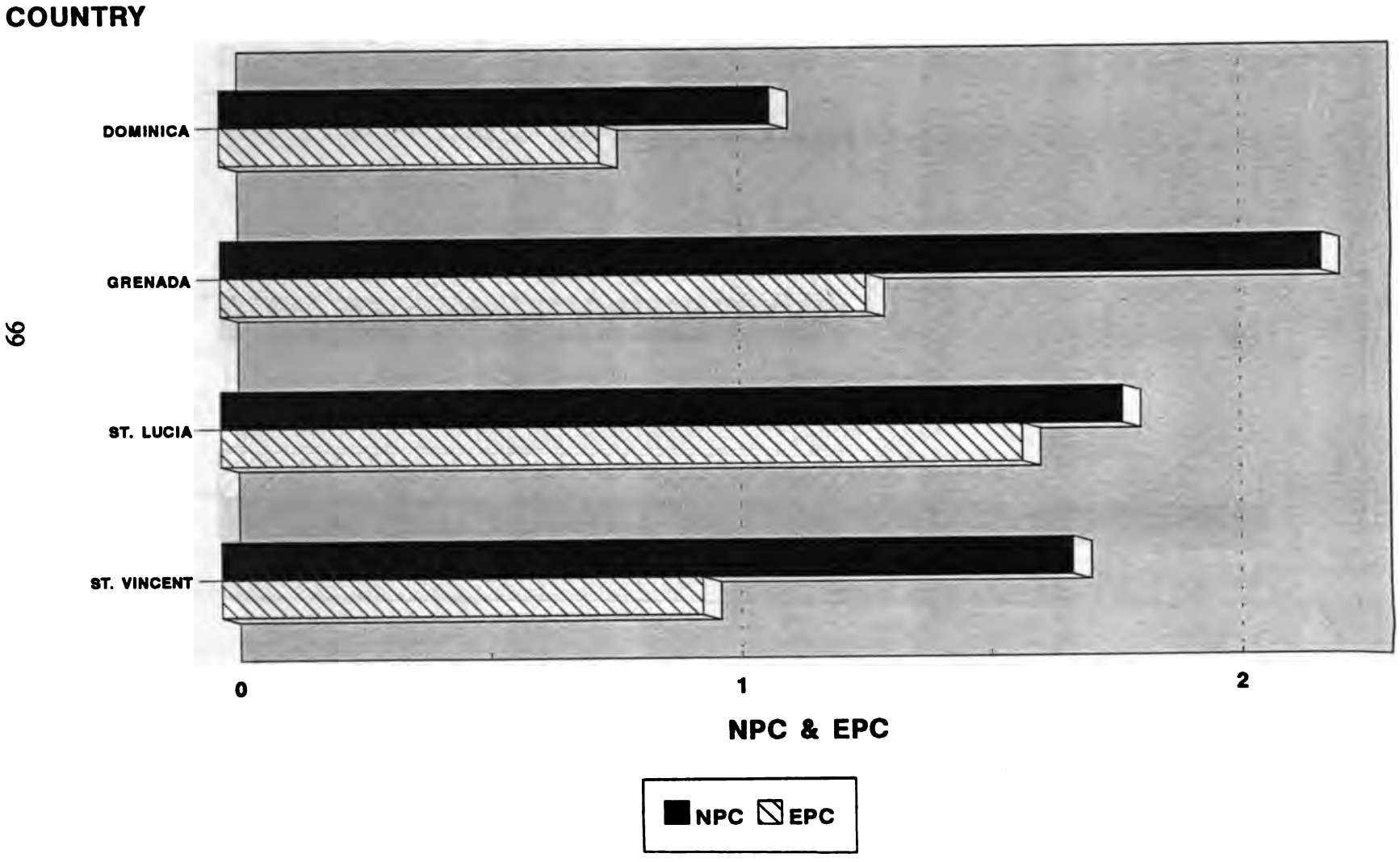

COUNTRY
GRENADA
ST. LUCIA
ST. VINCENT
0
1
2
3
4
NPC & EPC
NPC
EPC

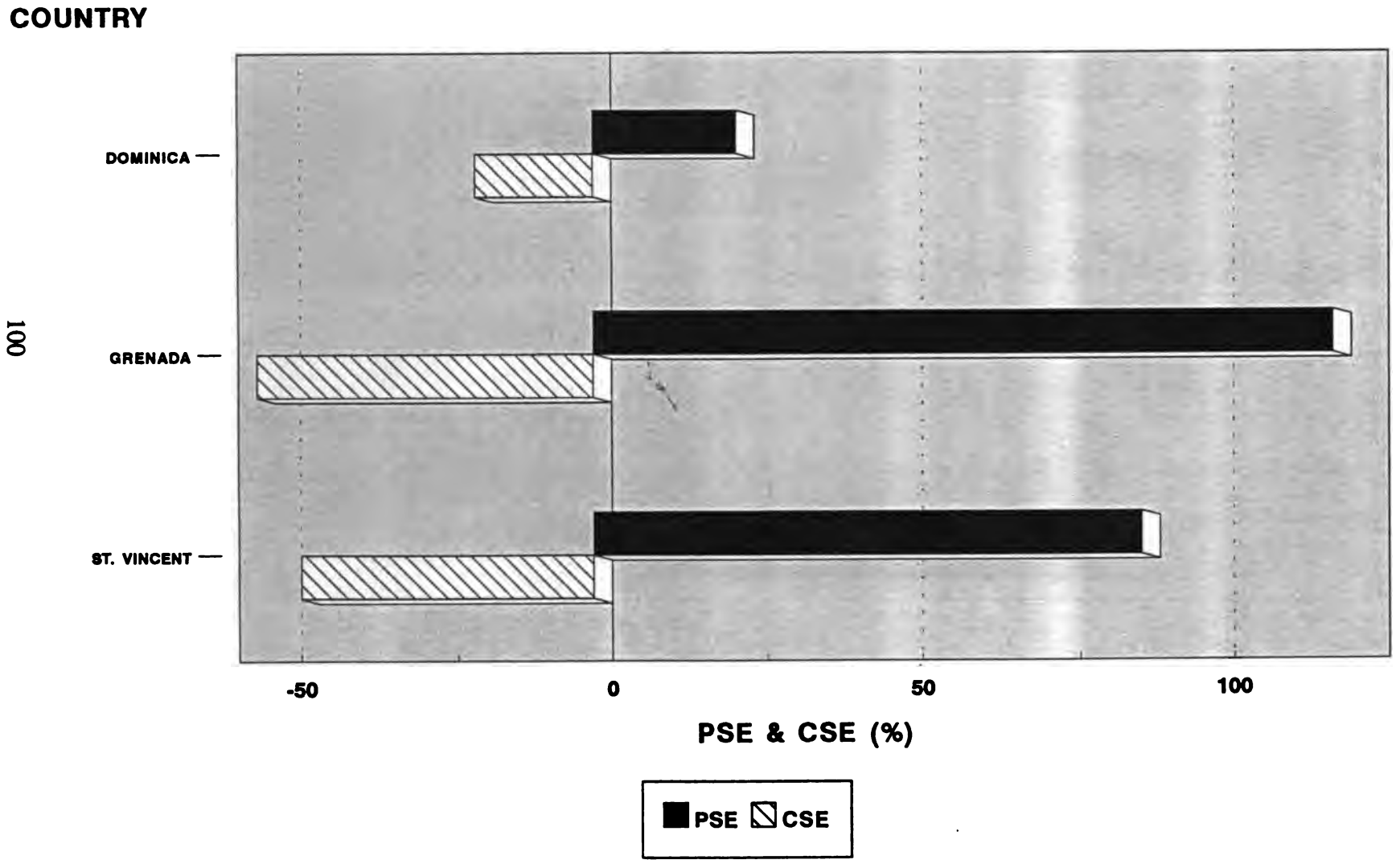
FIGURE 28: SWEET POTATO
Relative NPC and EPC by Country




COUNTRY
DOMINICA
GRENADA
ST. LUCIA
ST. VINCENT
0
1
2
NPC & EPC
NPC
EPC

APPENDIX 111
RELATIVE PSE AND CSE BY COMMODITY ACROSS COUNTRY

FIGURE 30: ANTHURIUM
Relative PSE and CSE by Country



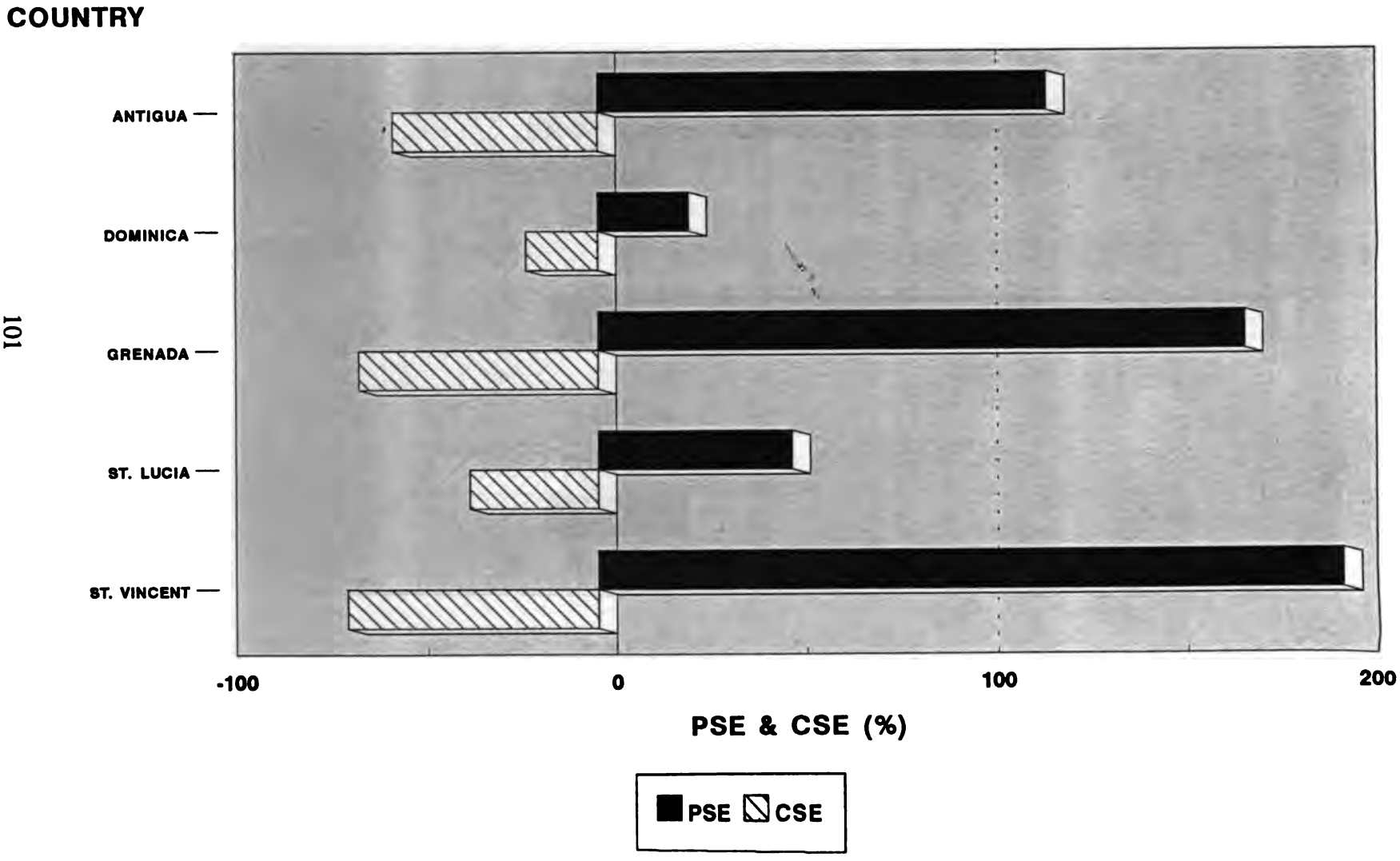
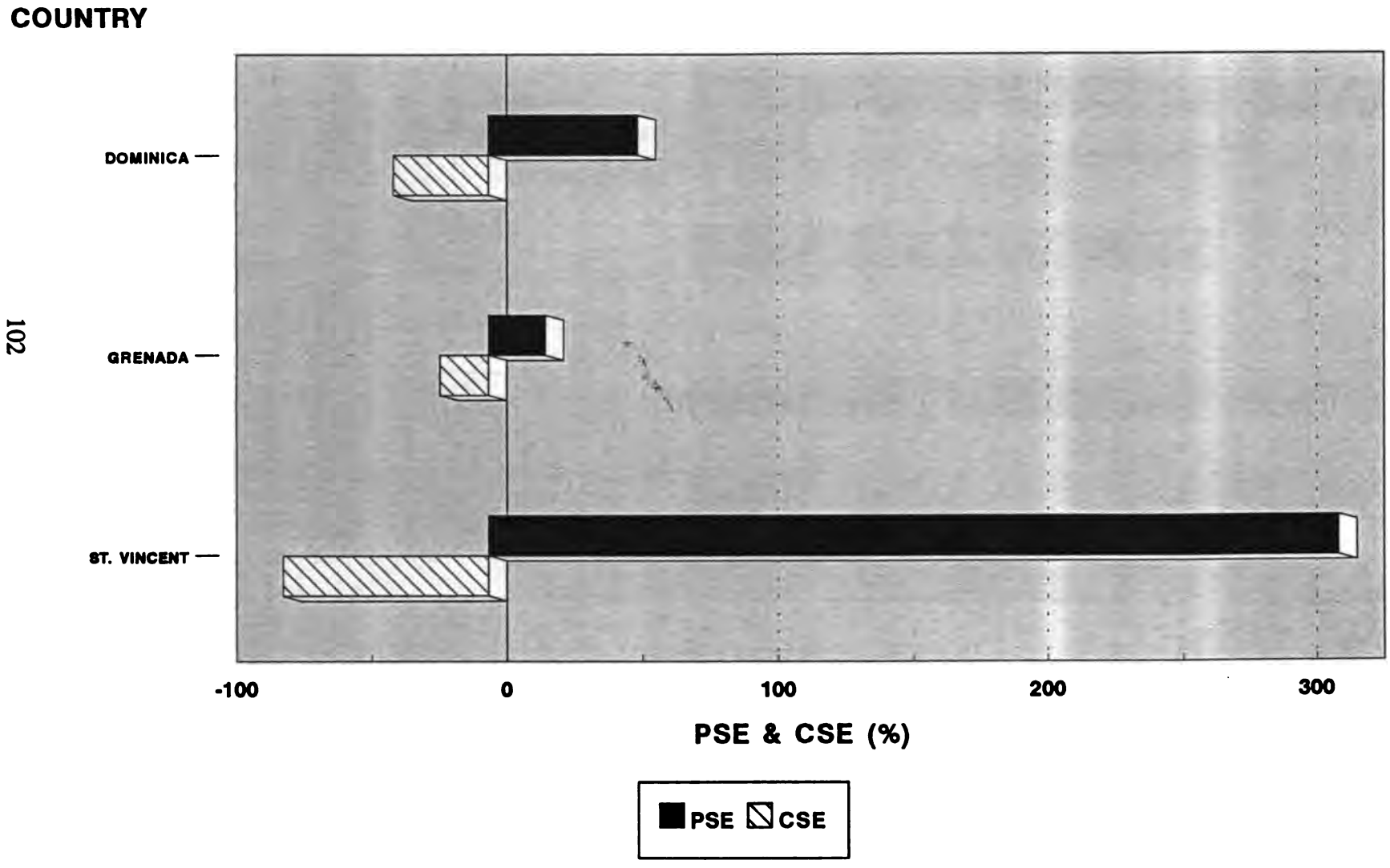

COUNTRY
ANTIGUA
DOMINICA
GRENADA
ST. LUCIA
ST. VINCENT
-100
0
100
200
PSE & CSE (%)
PSE
CSE

FIGURE 32: BREADFRUIT
Relative PSE and CSE by Country



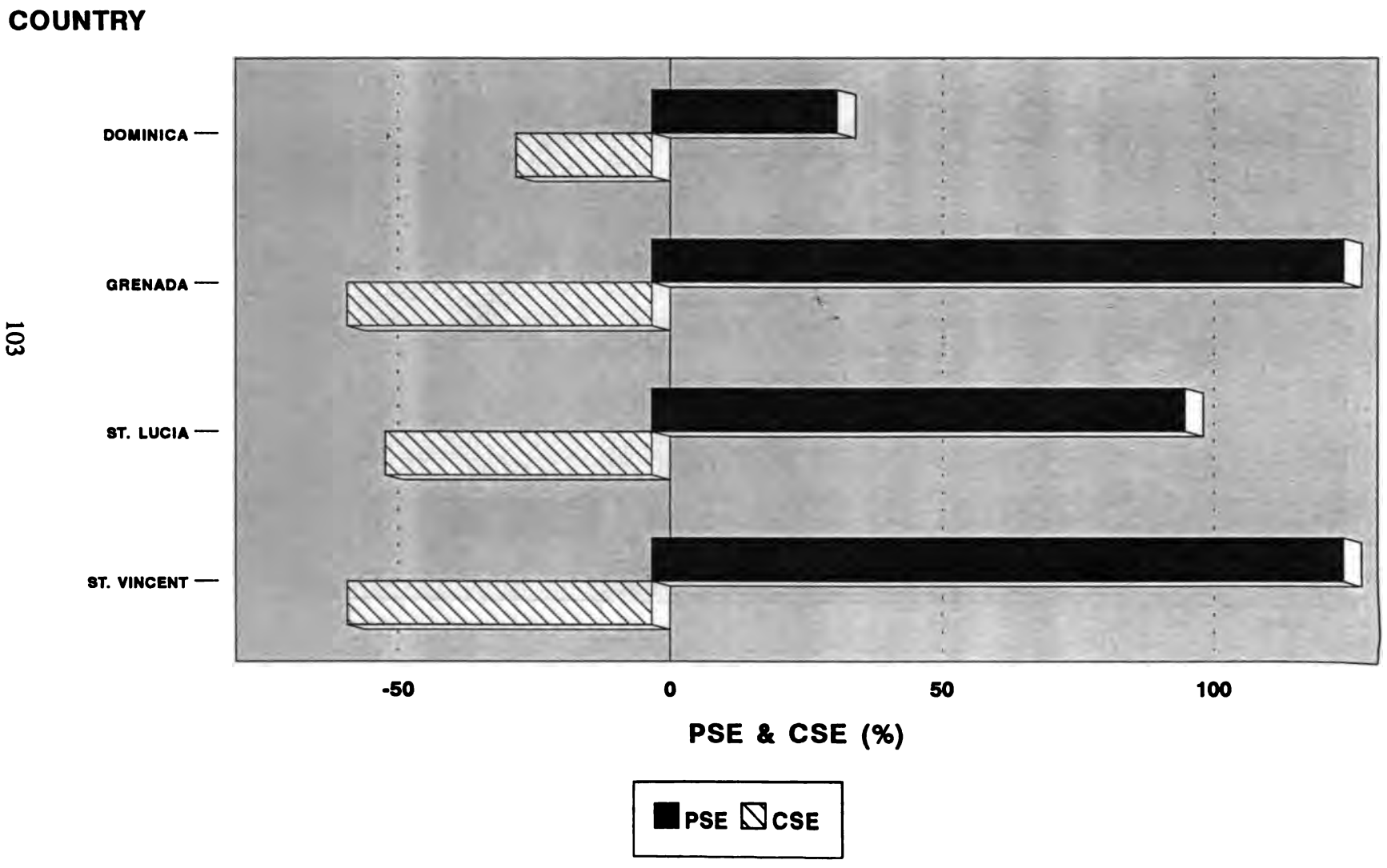
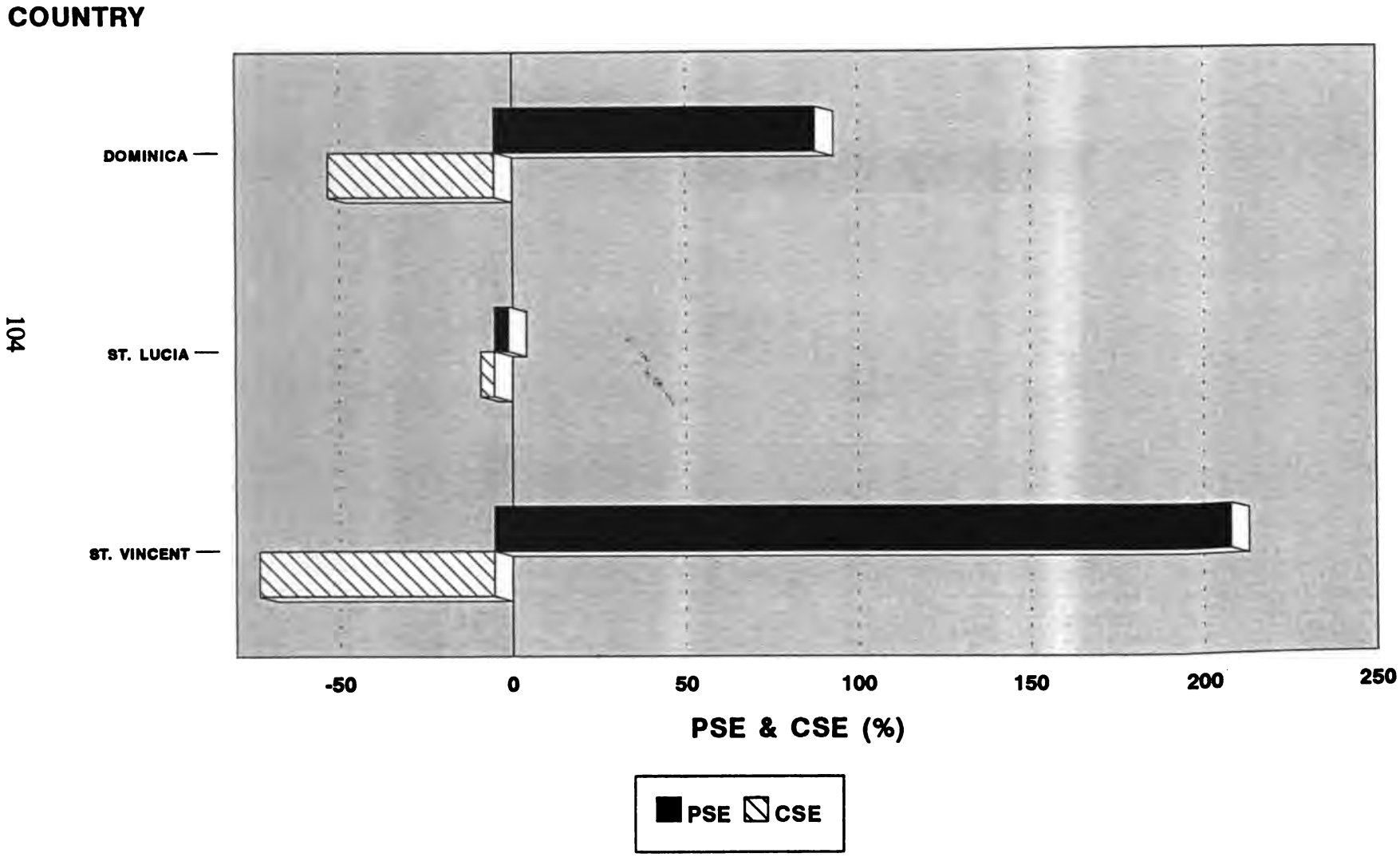

COUNTRY
DOMINICA
GRENADA
ST. LUCIA
ST. VINCENT
-50
0
50
100
PSE & CSE (%)
PSE
CSE

FIGURE 34: GINGER
Relative PSE and CSE by Country



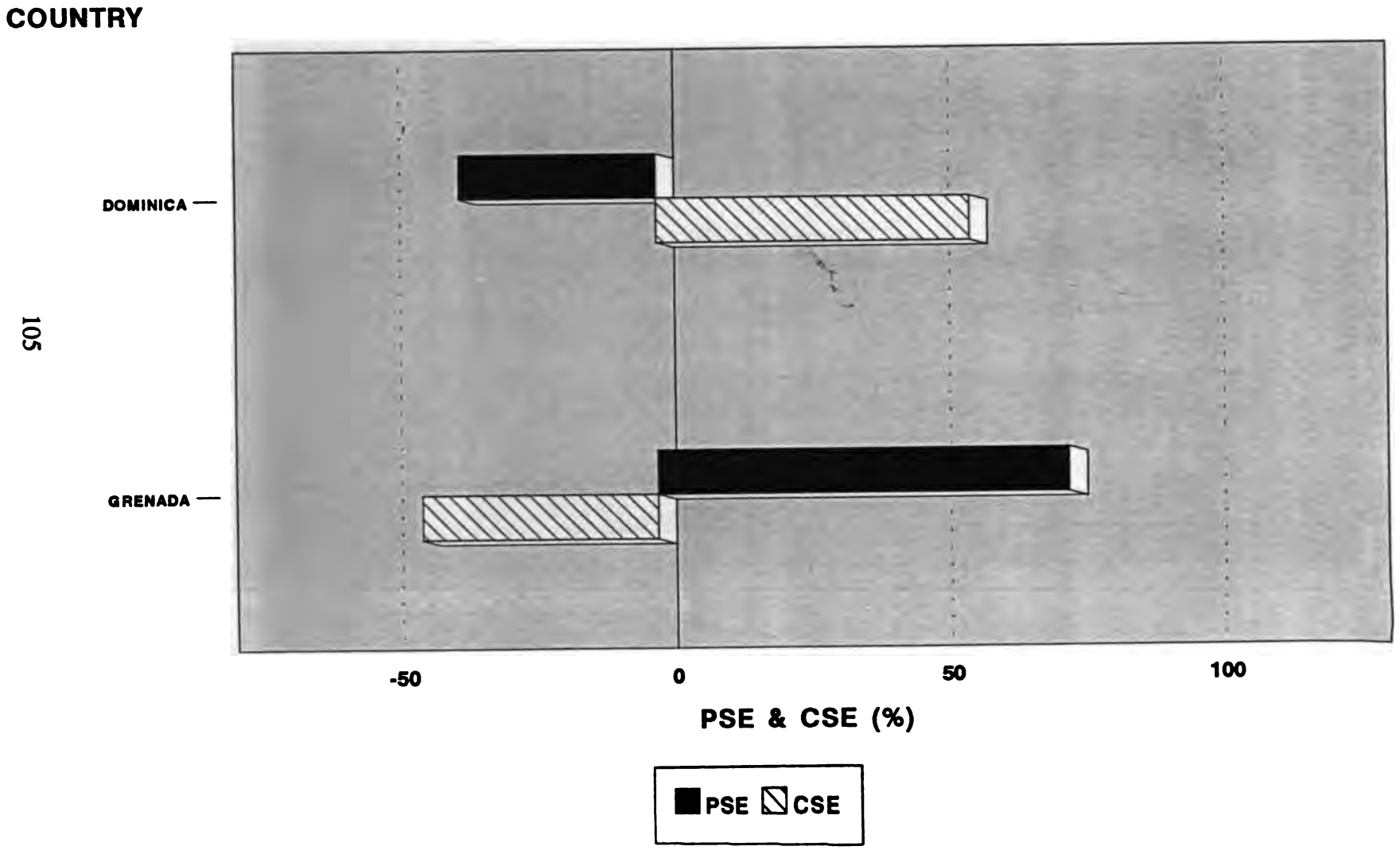
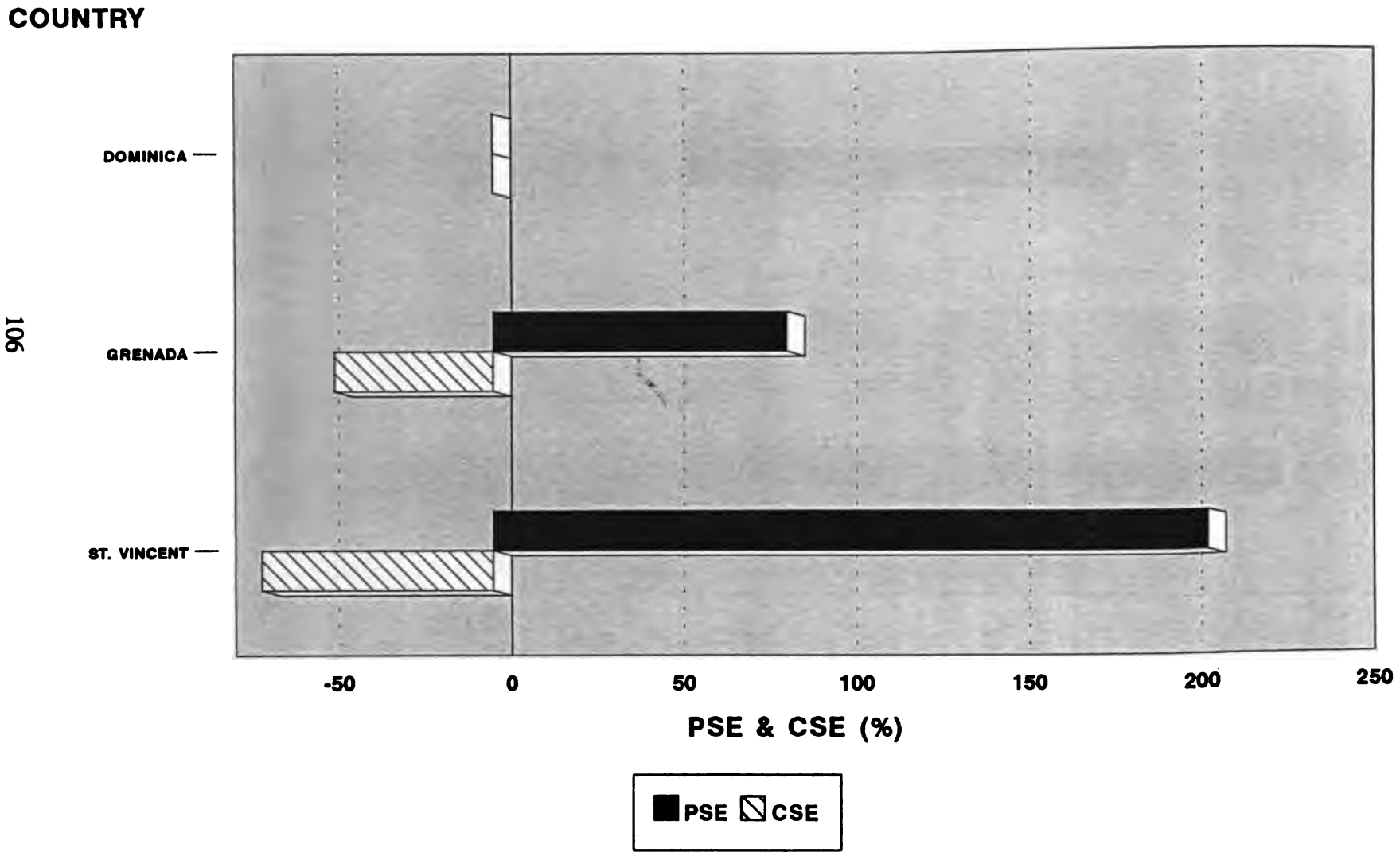

COUNTRY
DOMINICA
GRENADA
-50
0
50
100
PSE & CSE (%)
PSE
CSE

FIGURE 36: GOLDEN APPLE
Relative PSE and CSE by Country



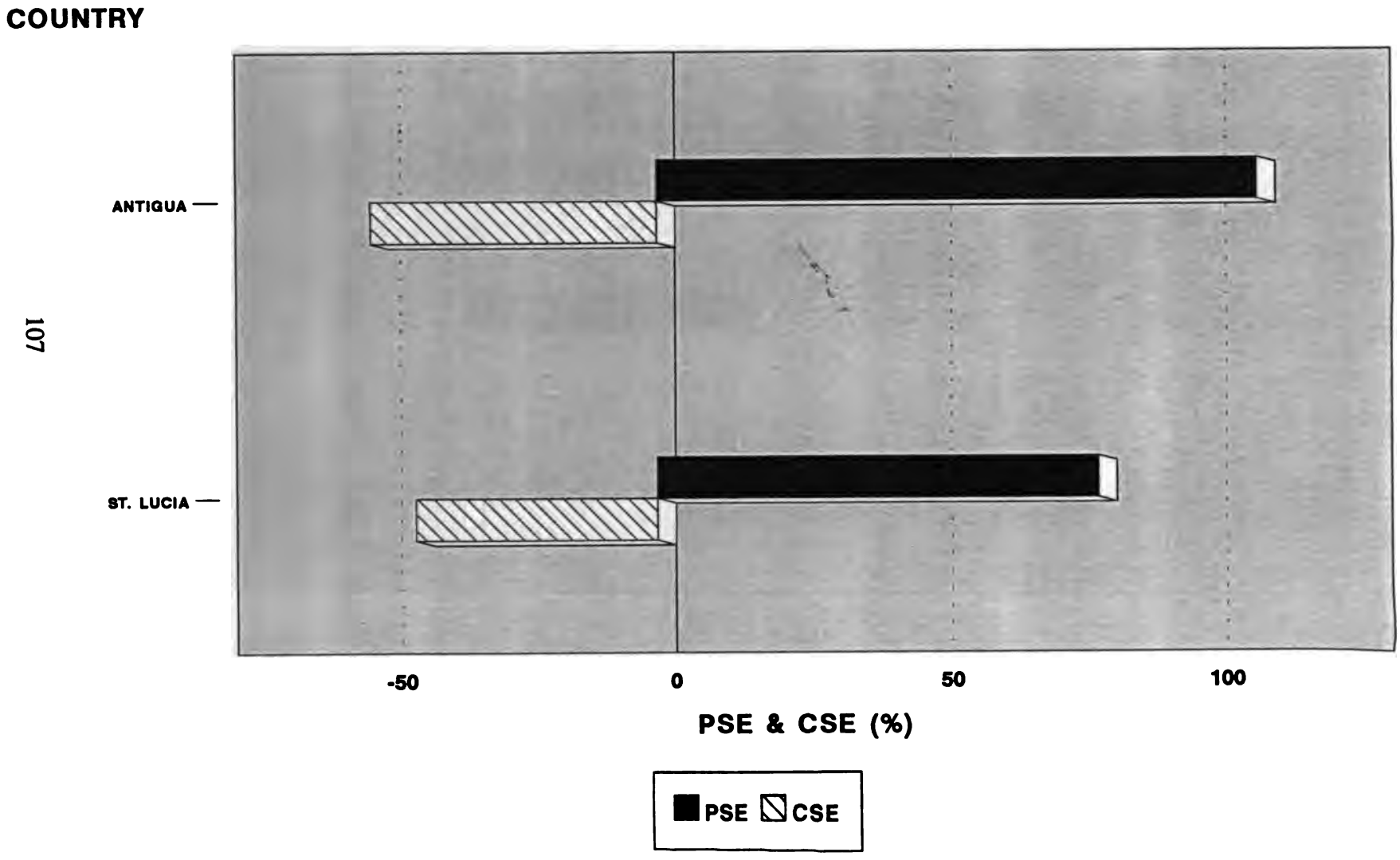
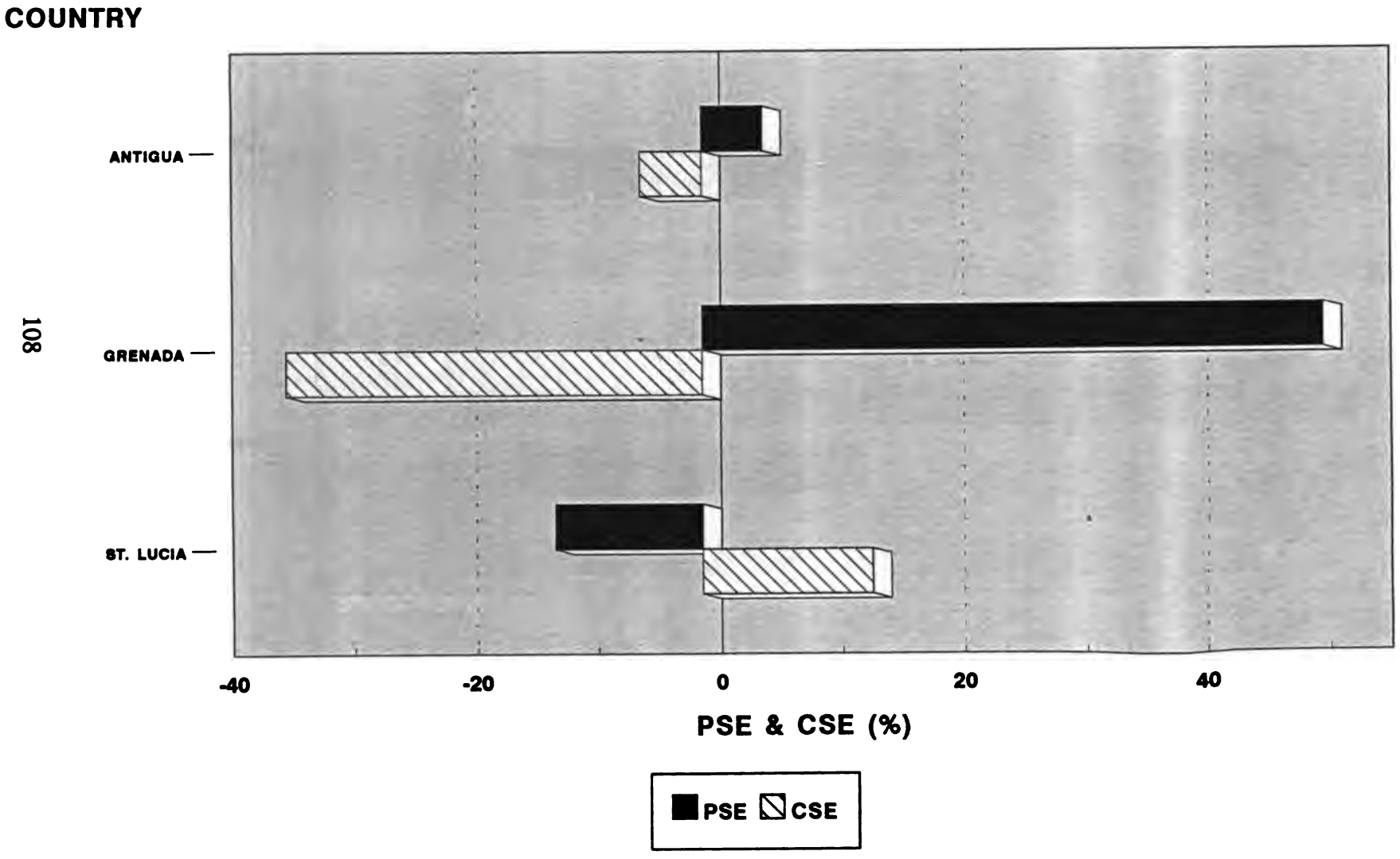

COUNTRY
ANTIGUA
ST. LUCIA
-50
0
50
100
PSE & CSE (%)
PSE
CSE

FIGURE 38: MANGO
Relative PSE and CSE by Country



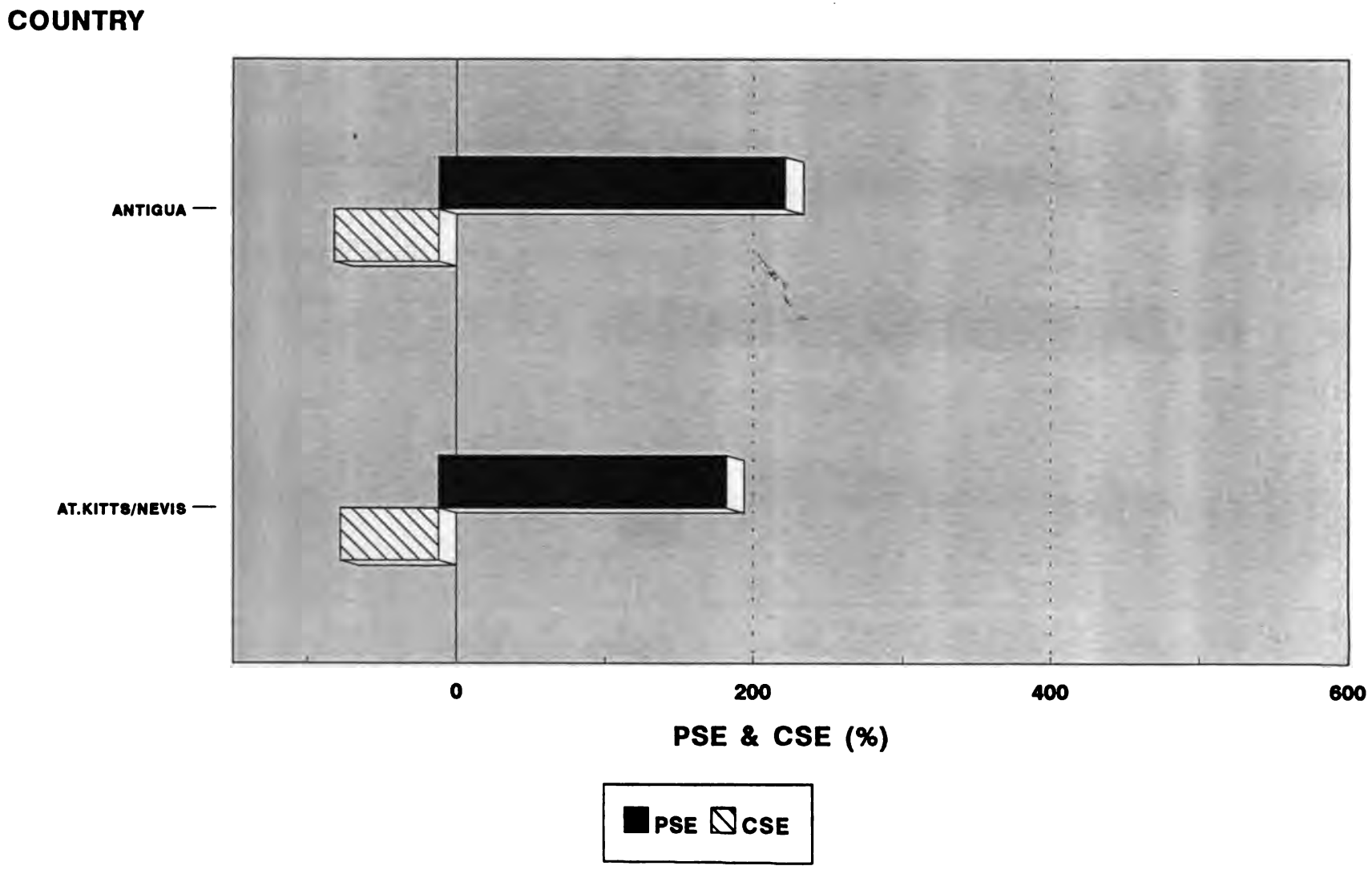
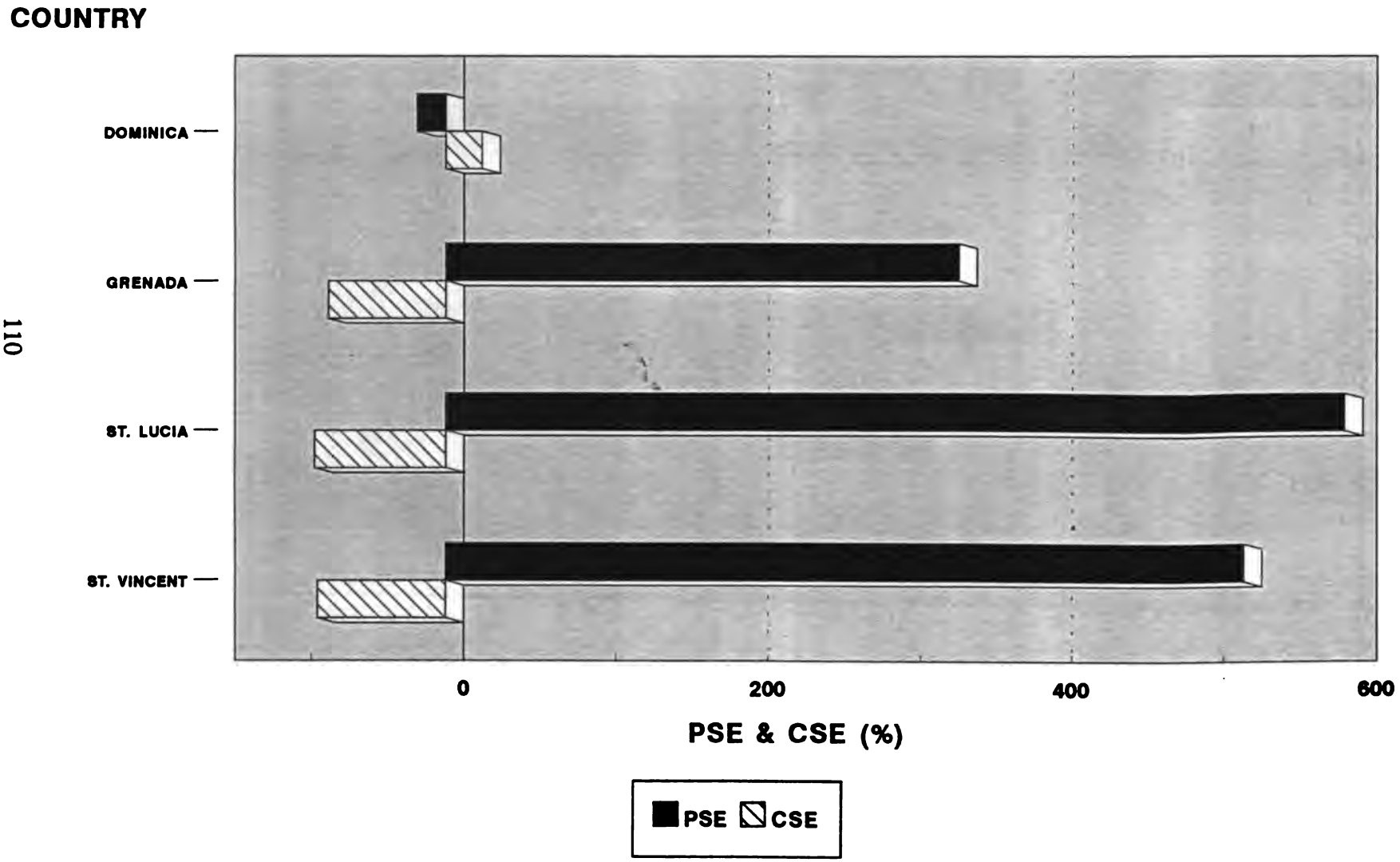

COUNTRY
ANTIGUA
AT.KITTS/NEVIS
0
200
400
600
PSE & CSE (%)
PSE
CSE

FIGURE 40: PASSION FRUIT
Relative PSE and CSE by Country



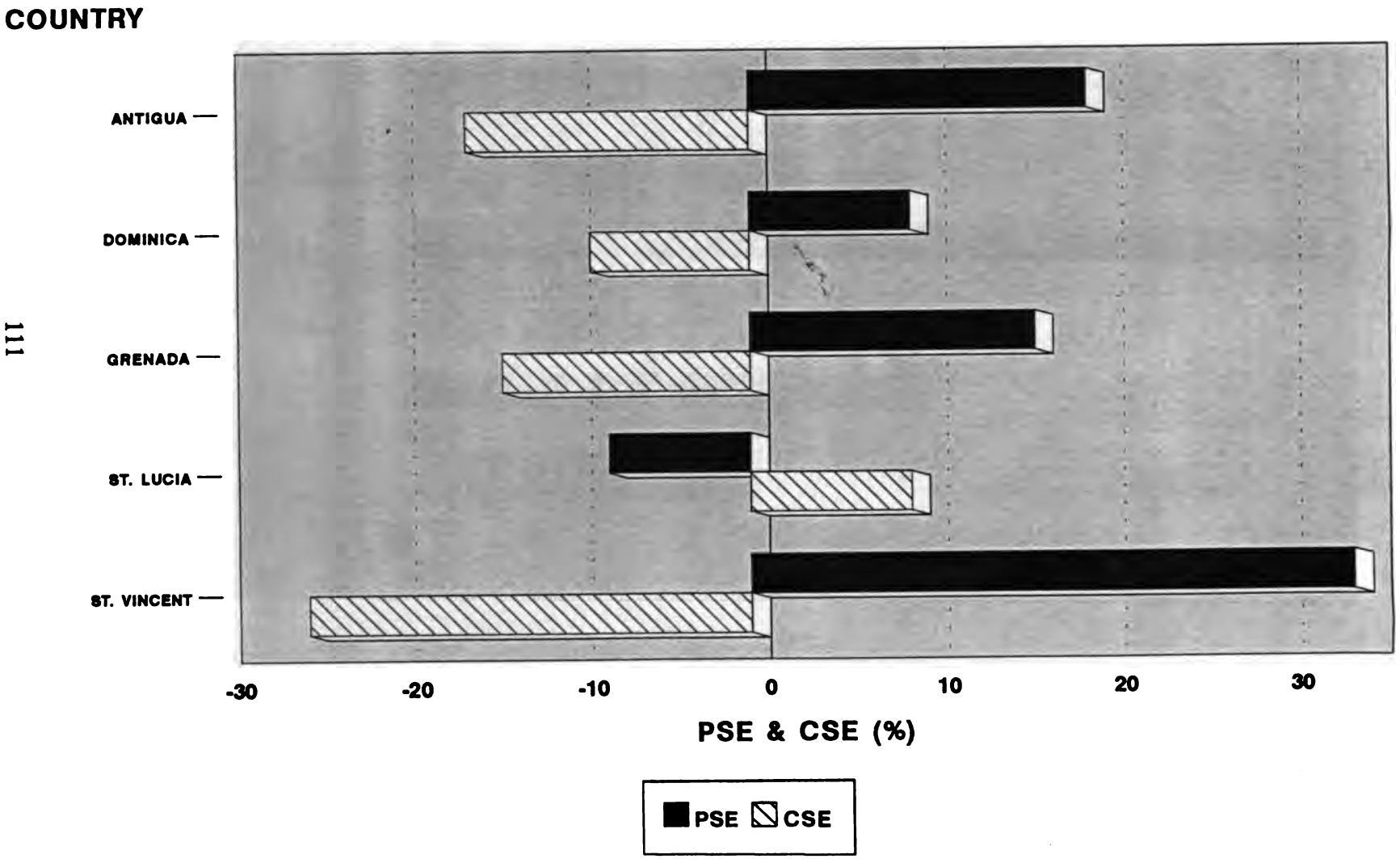
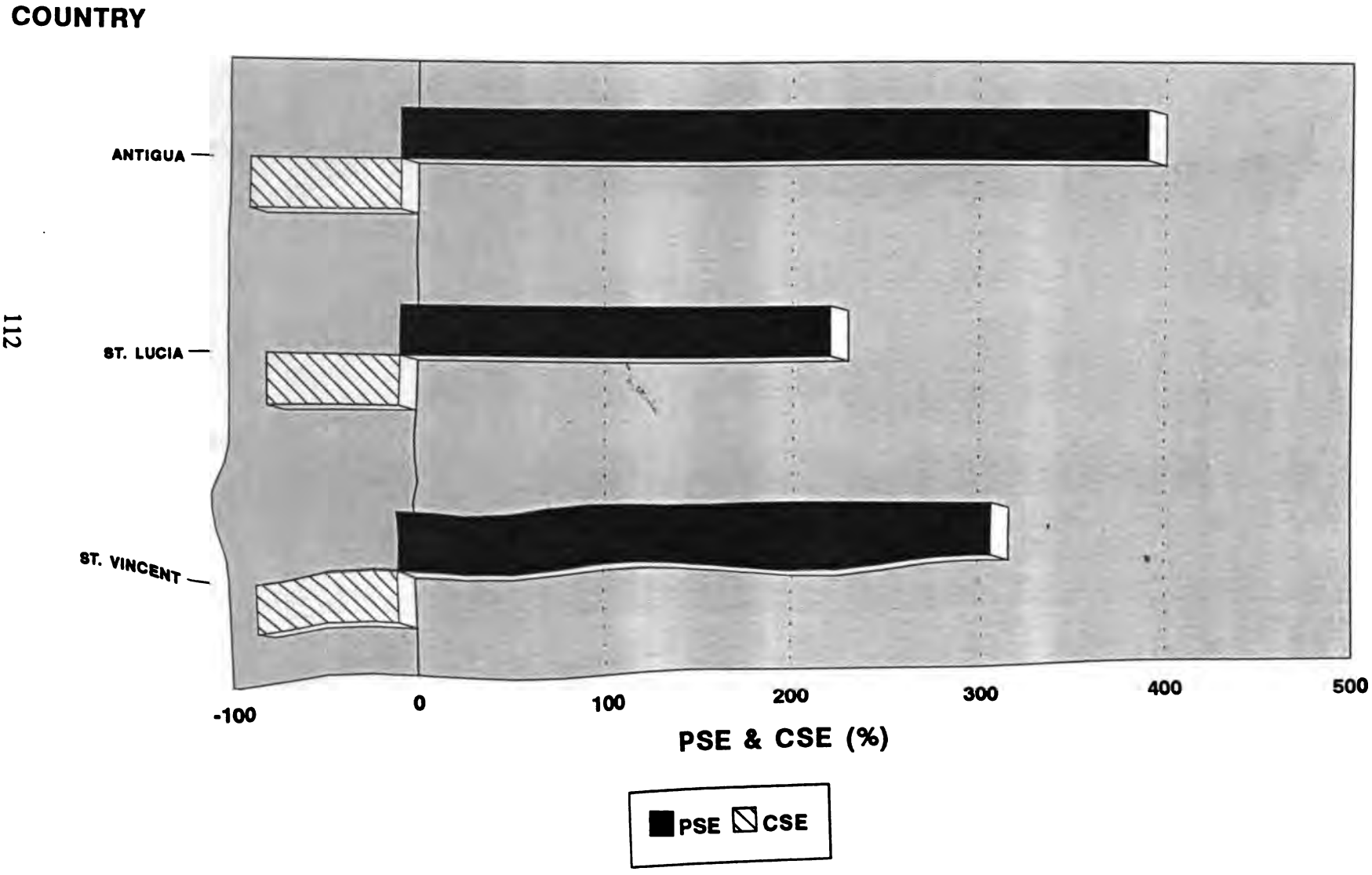

COUNTRY
ANTIGUA
DOMINICA
GRENADA
ST. LUCIA
ST. VINCENT
-30
-20
-10
0
10
20
30
PSE & CSE (%)
PSE
CSE

FIGURE 42: PINEAPPLE
Relative PSE and CSE by Country



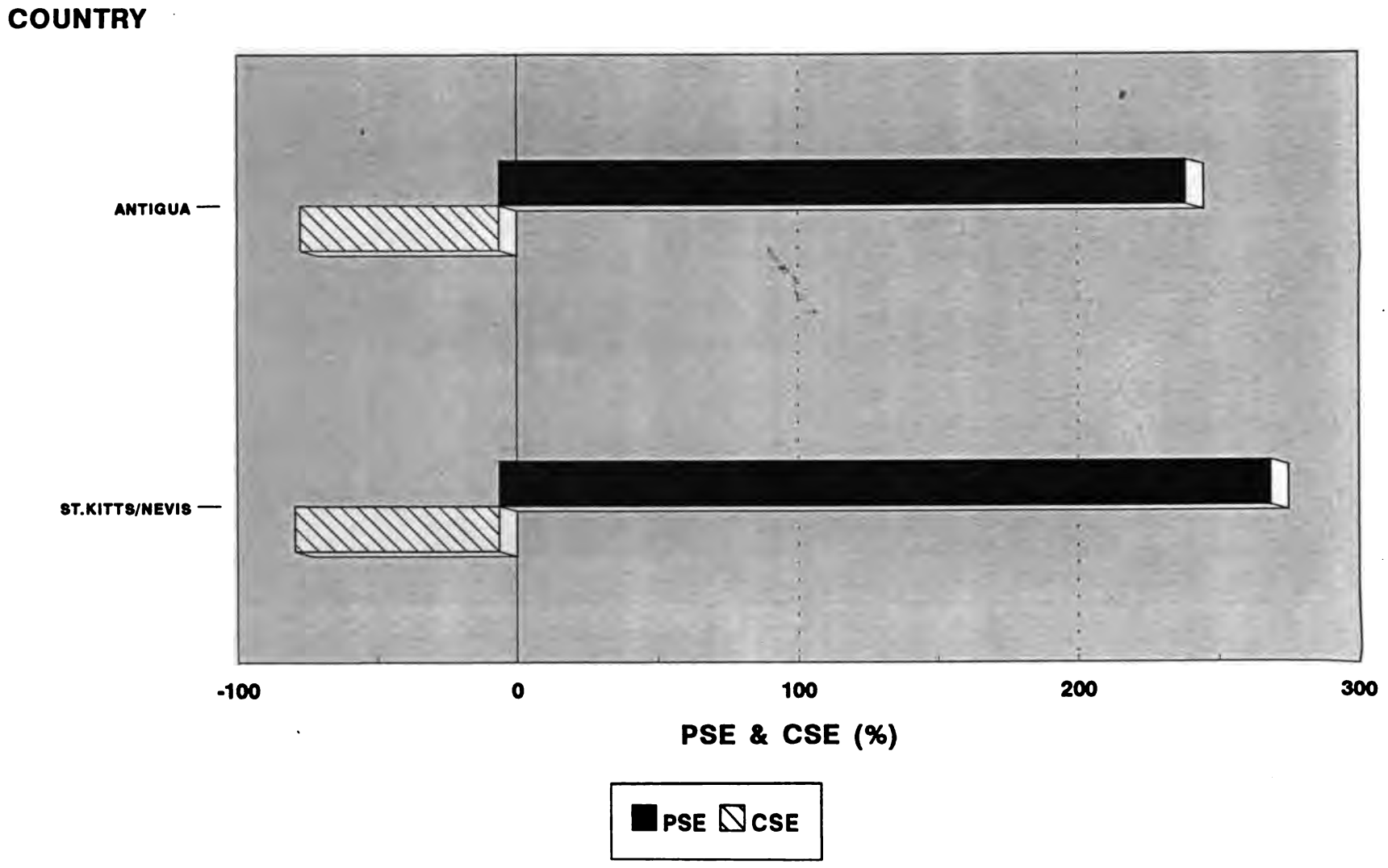
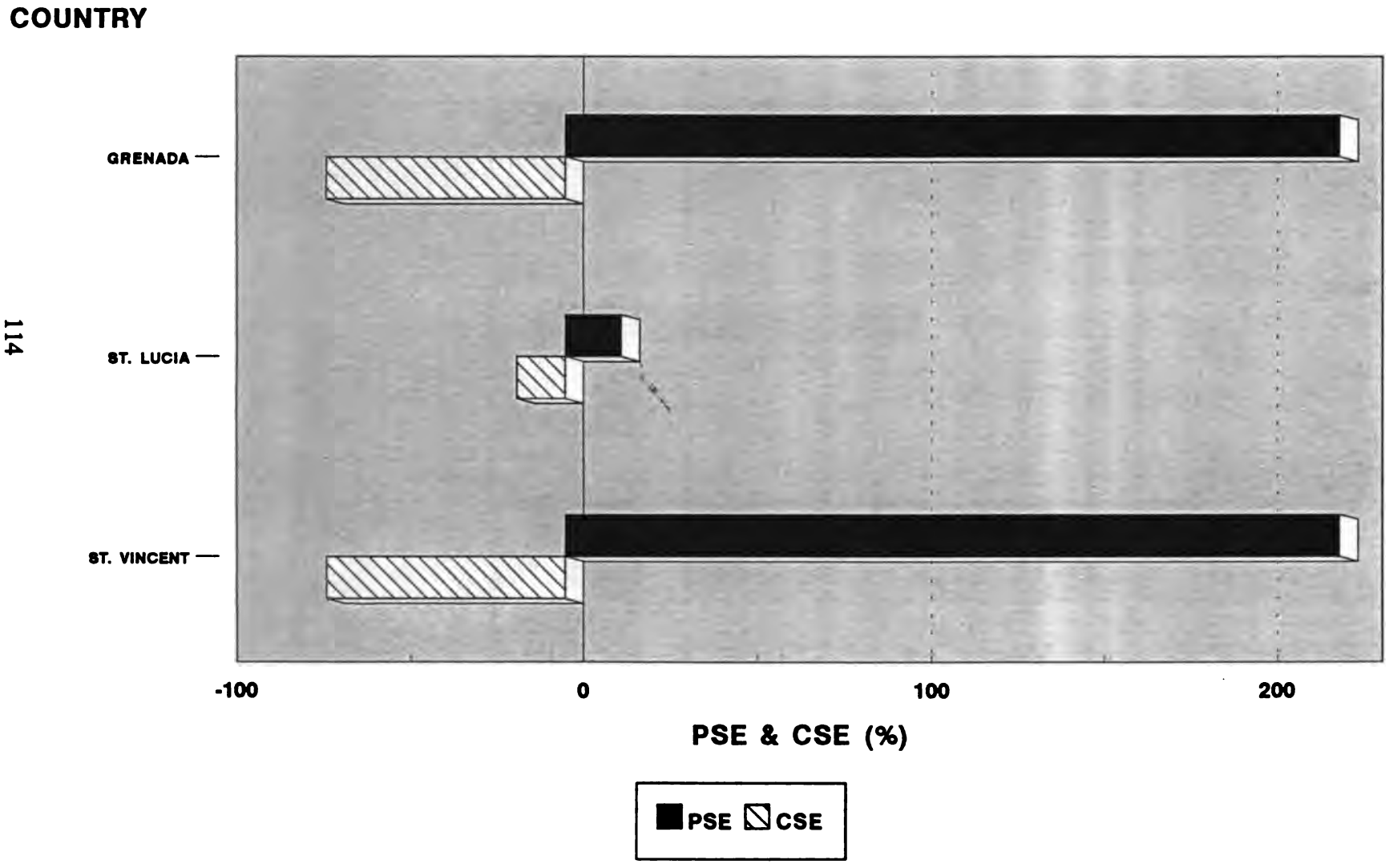

COUNTRY
ANTIGUA
ST.KITTS/NEVIS
-100
0
100
200
300
PSE & CSE (%)
PSE
CSE

FIGURE 44: SOURSOP
Relative PSE and CSE by Country



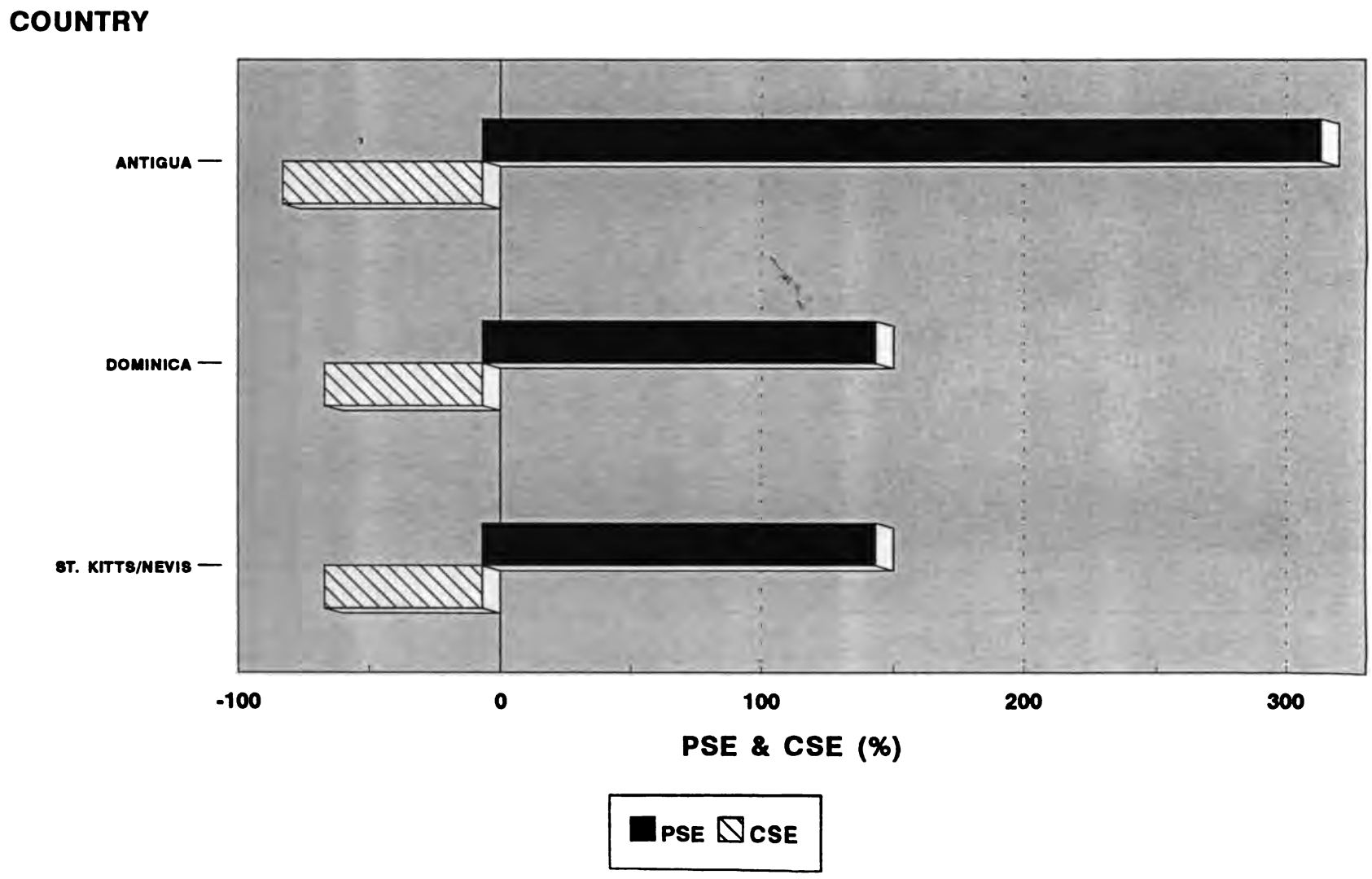
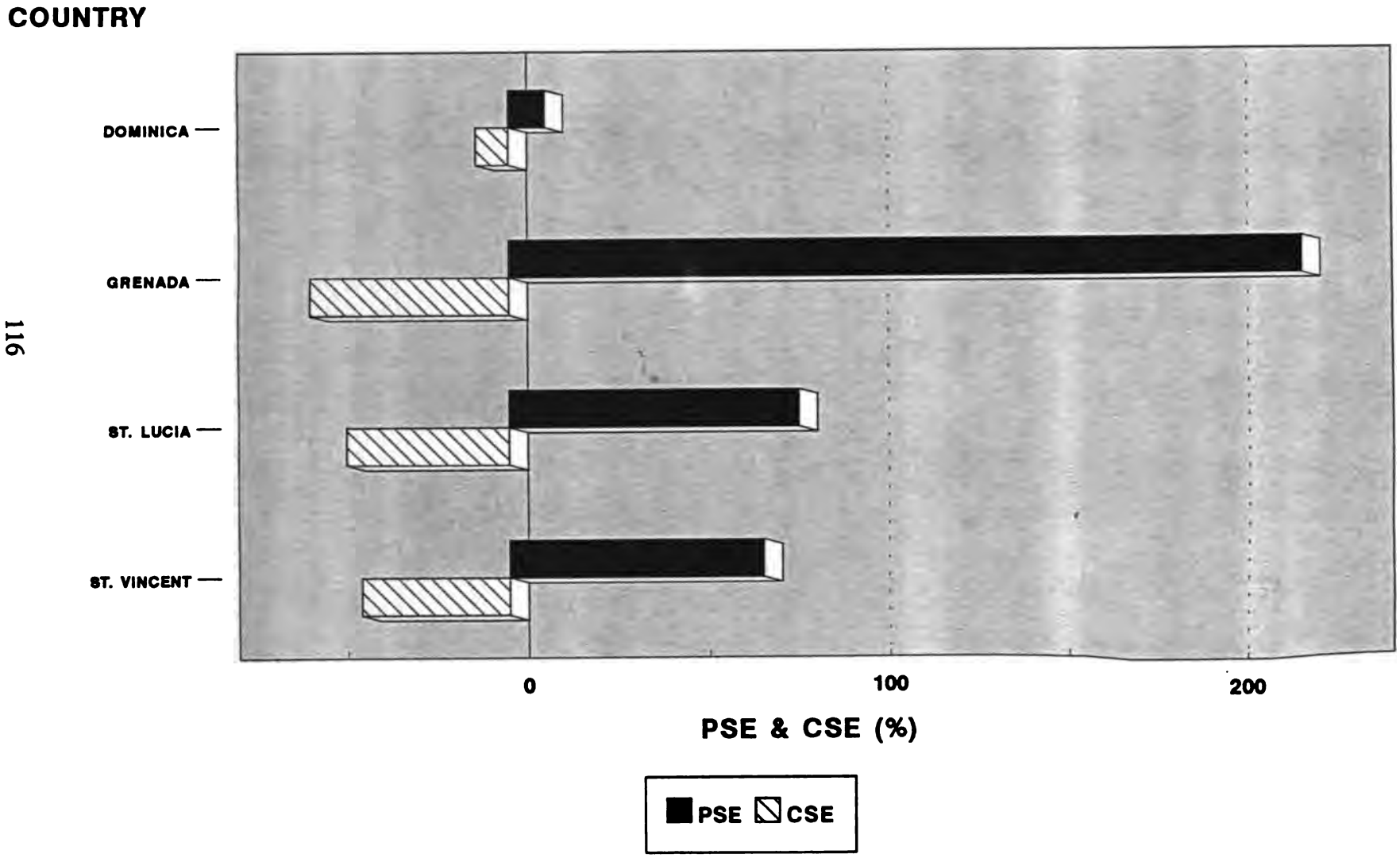

COUNTRY
ANTIGUA
DOMINICA
ST. KITTS/NEVIS
-100
0
100
200
300
PSE & CSE (%)
PSE
CSE

FIGURE 46: TANNIA
Relative PSE and CSE by Country



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